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30

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CONTENTS

ARTICLES:

COMMUNICATIONS:

MEMORIALS:

REVIEWS OF BOOKS:

TITLES OF NEW BOOKS:

PAPERS AND PROCEEDINGS

(in May 1953 number)

CONTRIBUTORS:

Leading articles are marked (a); communications (c); papers read at the annual meeting, published in the Papers and Proceedings, separately paged, are marked (p); memorials (m); and all others are book reviews.

THE AMERICAN ECONOMIC REVIEW

Vol. XLIII MARCH, 1953 Number 1

ARTICLES

COMMUNICATIONS

BOOK REVIEWS

Manuscripts and editorial correspondence relating to the regular quarterly issues of the REVIEW should be addressed to Bernard F. Haley, Managing Editor of THE AMERICAN ECONOMIC REVIEW, Stanford University, Stanford, California.

OTHER DEPARTMENTS

HAROLD ADAMS INNIS

Fifty-fourth President of the American Economic Association, 1952

Harold A. Innis was born at Otterville, Ontario, Canada, on November 5, 1894. He died at Toronto on November 8, 1952. After receiving his B.A. degree at McMaster University in 1916 and his M.A. in 1918, he went to the University of Chicago to continue his graduate work and received his Ph.D. degree there in 1920. Glasgow University awarded him an honorary LL.D. in 1948.

In 1920, Dr. Innis became lecturer of political economy at the University of Toronto, was advanced to an assistant professorship in 1924, to an associate professorship in 1929, and to a full professorship in 1936. He was appointed head of the department in 1937 and dean of the School of Graduate Studies in 1947. These latter positions he held until his death.

Professor Innis was a fellow of the Royal Society of Canada and corresponding member of the Royal Economic Society. He served as representative of the American Economic Association to the Social Science Research Council, 1947-52.

An account of Harold Innis' life and works may be found in the papers presented at the Memorial Session of the December, 1952, meetings and published in the March, 1953, issue of the *American Economic Review.*

Number 54 of a series of photographs of past presidents of the Association.

The American Economic Review

VOLUME XLIII MARCH, 1953 NUMBER ONE

HAROLD ADAMS INNIS*

1894-1952

I

Canadian social scientists unanimously approved and rejoiced when this Association elected Harold Adams Innis as its president: they recognized alike the wisdom and the generosity of this action. Your election of the alien Innis was a finer tribute than my words can frame. It is my duty, however, to attempt to express the affection we had for him, and the intellectual and moral debt we owe to him, and to recall to mind some qualities of the man we honour in order that we may, to borrow words from an address in memory of Wesley Clair Mitchell delivered by Dr. Willits, "acquire increased strength and discernment for ourselves and others by contemplating the qualities which made him unique."

Harold Adams Innis was born on November 5, 1894, near the village of Otterville in southwestern Ontario. His was the rigorous educational experience of the son of the farm: chores, a walk to the station, a twenty-mile train journey to attend Woodstock Collegiate Institute, the return journey and again the chores. No wonder that he chose to quote these words of Leslie Stephen when he addressed the Conference of Commonwealth Universities in Oxford in 1948: "Receptivity of information which is cultivated and rewarded in schools and also in universities is a totally different thing from the education, sometimes conferred even by adverse circumstances, which trains a man to seize opportunities either of learning or of advancement." No wonder too that in the Report of the Manitoba Royal Commission on Adult Education he warned against evils of the examination system by which students are selected from the schools for admission to universities. "The results," he said, "are evident in the success of students in large

* The succeeding papers were presented at the memorial session in honor of the late President Innis held at the Sixty-fifth Annual Meeting of the American Economic Association, December 28, 1952.

cities and of middle-class parents. Uniformity of examination systems over wide areas involves wholesale discrimination against districts which cannot attract the best teachers or command the best equipment." But it was not the injustice to individuals of such discrimination so much as the national loss that appalled him. "Any community," he wrote, "has only a limited number capable of sustained mental effort. . . . A democratic society can thrive only by the persistent search for its greatest asset and by constant efforts to conserve, to encourage, to train, and to extend it. . . . Universities must strive to enlist most active energetic minds to train most active energetic minds."

Harold Innis graduated from McMaster University as a Bachelor of Arts in 1916 and immediately enlisted as a signaller in the Fourth Battery of the Canadian Field Artillery. He served overseas and was wounded. He did not speak of these experiences but they were not forgotten. Years later, in an address to students on Armistice Day, 1933, he said: "It has not been long since most of us have been awakened by nightmares of intense shell-fire, and even now the military bands played with such enthusiasm by young men are intolerable, and Armistice Day celebrations are emotionally impossible." One suspects that the cruelty of army life was an important influence in solidifying his belief that the individual must be protected from the institution. Returning to Canada, still partially disabled, he was determined to continue his studies and determined that his field should be economics. He won his M.A. degree at McMaster in 1918, and went on to Chicago for his Ph.D. He was very fortunate in his choice of a graduate school for this was a great period in the history of a great university. Our chairman, Professor Chester Wright, was primarily responsible for his direction but Clark, Knight, Millis, Moulton and Viner were among the professors who stimulated, encouraged, and influenced him. Perhaps equally important were the students with whom he worked: of these I know he would have paid tribute to James Angell, Morris Copeland, Carter Goodrich, Walter Smith, Miss Cleona Lewis and Miss Helen Wright. His doctoral thesis, *A History of the Canadian Pacific Railway,* was published in 1923.

Harold Innis was appointed to the staff of the University of Toronto in 1920 as a lecturer in the department of political economy. In that department he spent his whole professional career. In 1937 he became the fifth head of the department in succession to W. J. Ashley, James Mavor, R. M. MacIver and E. J. Urwick. He was, it will be noticed, the first Canadian to hold that position. It is a department in which economic theory and economic history, political theory and government, sociology, and commerce are all included. The atmosphere of the department makes for breadth; the mere specialist would find it un-

congenial. For Harold Innis this was the right kind of department in which to grow; for the department Harold Innis was pre-eminently the right kind of head. The economic historian became the social scientist, the social philosopher, the humanist. The strong historical tradition begun by W. J. Ashley was renewed and strengthened; but he was alert to the necessity of progress along theoretical lines too. It was this same breadth of scholarly vision that made appropriate his appointment in 1947 as dean of the newly reorganized School of Graduate Studies, and in 1951 as chairman of a President's Committee on the Humanities. This task unfortunately was unfinished.

Harold Innis gave much thought to the rôle of the University and the dangers that beset it. Its rôle, he believed, was crucial for western civilization; anything that endangered it threatened that civilization. He closed an address to a wartime Convocation at the University of New Brunswick, after having been admitted to the degree of Doctor of Laws, *honoris causa,* with these words:

> As recent graduates, we dedicate ourselves afresh to the maintenance of a tradition without which western culture disappears. We pay tribute to the memory of those who fell in the last war, and of those who have fallen in this war, by the ceremonies in which we have participated. These ceremonies peculiar to an institution which has played the leading role in the flowering of western culture remind us of the obligation of maintaining traditions concerned with the search for truth for which men have laid down and have been asked to lay down their lives.

At a similar ceremony at McMaster University he said: "You and I have become today members of a community which in a very real sense is the life of western civilization." The dangers came from those who feared free inquiry, from the Church, the State, and from Business. "Business and political exploitation of universities by bribes," he said in the address at McMaster, "reflects a complete inability to understand that universities honour donors and not donors universities. The impression that universities can be bought and sold, held by business men and fostered by university administrators trained in playing for the highest bid, is a reflection of the deterioration of western civilization. To buy universities is to destroy them and with them the civilization for which they stand." There were, however, more subtle dangers within, especially related to the advance of science and the mechanization of knowledge. In a paper entitled "A Plea for Time" he wrote about the trend in universities to add courses because people like to do them, because they will be useful to people after they graduate, because members of the staff like to give them, and because an additional course means a larger department and a larger budget.

> These tendencies reflect a concern with information. They are supported by the text-book industry and other industries which might be described as information industries. Information is provided in vast quantities in libraries, encyclopaedias, and books. It is disseminated in universities by the new media of communication including moving pictures, loud speakers, with radio and television in the offing. Staff and students alike are tested in their ability to disseminate and receive information.

Later in the same paper he said:

> The blight of lying and subterfuge in the interest of budgets has fallen over universities, and pleas are made on the grounds that universities are valuable because they keep the country safe from socialism, they help the farmers and industry, they help in measures of defence. Now of course they do no such thing and when such topics are mentioned you and I are able to detect the odour of dead fish. Culture is not concerned with these questions. It is designed to train the individual to decide how much information he needs and how little he needs, to give him a sense of balance and proportion, and to protect him from the fanatic.

Veblen in *The Higher Learning in America* was not more scathing; but Innis was perhaps more hopeful, and more helpful. For these are only his words. We who worked with him in the University can testify to deeds and to a powerful influence for good in the councils of the University, and above all in personal discussion.

Harold Innis was a scholar of tremendous industry. Not content with books and documents he travelled all over the Dominion to get the feel of that economic life about which he wrote. Typical of such activity was his toilsome and dangerous journey down the MacKenzie River. I still remember his pleasure when he heard himself described as the best deck-hand in the North. His publications are so many that the preparation of a complete bibliography will require considerable work. The land marks were: *The History of the Canadian Pacific Railway* (1923), *The Fur Trade in Canada* (1930), *Settlement and the Mining Frontier* (1936), *The Cod Fisheries* (1940), and *Empire and Communications* (1950). Two volumes of collected papers from which many of the quotations in this tribute have come should be noted: *Political Economy and the Modern State* (1946) and *The Bias of Communication* (1951). A final volume of essays, *Changing Concepts of Time* (1953) published a few days after his death is a monument to his courage. He had revised the papers and read the proofs in spite of his illness. So had he driven himself all his life. Though his industry was tremendous, hard work never dulled his imagination. He knew the facts, and he recited them in his writings: but his was not that antiquarianism, that "useless accumulation of useful facts," which he

denounced. The contemplation of the facts led to penetrating insight Dr. R. A. MacKay in a tribute in the *Ottawa Citizen* put it this wa

> Of a reflective, imaginative, and almost intuitive cast of mind, he had a singular capacity for seeing significant relationships between the material environment and ideas, and between facts themselves, which often escaped the more pedestrian scholar. . . . At times his original mind leaped great chasms to conclusions which more timid or less imaginative minds could not follow.

Great and distinguished as was his contribution to scholarsh through his own writing, perhaps even greater was his contributi through the development, stimulus, encouragement, support, and occasion chastening, of his students, his colleagues in the Universi of Toronto, and his fellow workers in Canada and the United State fellow workers not just in economic history but in all the social scienc and in the humanities too. George Ferguson writing in the *Montre Star* did not exaggerate when he spoke of the "enormous influence" exercized and when he went on to say:

> The man had power he did not know he had. The social scientists of Canada—and many men besides—were largely Innis men. Scarcely one of them but had not come under his purging, beneficent authority. He drove their minds relentlessly into new and deeper categories of thought. He praised them and scourged them for their own good, and only the incompetents and the blind resented what he did.

He had early realized the importance of communication among tl social scientists of Canada, of ending the feuds and competition of tl past and of beginning a period of friendly cooperation. One thi needed was a Journal. In 1928 he persuaded the University of Toron to begin to publish at irregular intervals *Contributions to Canadi Economics*. He played an important part in the revival in 1929 of tl Canadian Political Science Association and a crucial part in 1934 the founding of the *Canadian Journal of Economics and Politic Science*, to replace *Contributions* and the *Proceedings* of the Associ tion, and to extend the possibility of publication. The Canadian Soci Science Research Council was largely his creation: he was a memb of its executive board in its formative years and its chairman from 194 to 1948. His part in the establishment of a parallel council for tl humanities was important and crucial. In all these organizations strove to ensure that they would give support to the individual schol following his own line, and not distort the free growth of scholarsh by bribing men to conform to the plans of others.

On three occasions Harold Innis accepted appointments as Roy Commissioner: the Nova Scotia Royal Commission of Economic I

quiry (1934), the Manitoba Royal Commission on Adult Education (1946), and the Dominion Royal Commission on Transportation (1948-50). While his direct participation in the making of public policy was limited, he was deeply concerned and not uninfluential. But certain important attitudes should be noted. First, there was the duty of the scholar to the University to maintain his integrity, his independence, his continued questioning. He was suspicious of scholars who played too large a part in public affairs. Second, his concern was not with the present—"real, insistent and complex"—not with months and years but with generations. One of the most dangerous trends of the time was that "foreshortening of practical prevision," which was illustrated by the readiness to accept Keynes's quip, "In the long run we are all dead." Third, there was the danger of a growing readiness to grasp at "solutions." "As an economist," he once said, "I am constantly faced with the extraordinary difficulty and complexity of the social sciences and constantly forced to admit defeat. If an economist becomes certain of the solution of any problem he can be equally certain that his solution is wrong." Finally, what particularly appalled him was readiness to find solutions in planning and regimentation. There is a speech he made before the Board of Evangelism and Social Service of the United Church of Canada which contains much that I would like to quote; from it I select these passages:

> The discussion of questions which affect people's lives must be carried on with great circumspection. I have had occasion recently to come in contact with two professions, the nursing and medical profession, and to be impressed again with the assumption that a long period of intensive training is essential to the preparation of individuals who are to be concerned throughout their careers with the handling of problems affecting people's lives. I have been appalled on the other hand and by comparison with the cavalier fashion in which great numbers of people discuss the problems of managing people's lives with almost no intensive training. Dale Carnegie's *How to Make Friends and Influence People* is a symptom of a widespread interest in the technique of pushing people around. In universities the rise of the social sciences and in particular the emphasis on business subjects, personnel management, industrial relations, social work, applied anthropology and so on point to the danger of forgetting that no one can undertake the task of pushing people around without a long period of intensive discipline and training, though in fairness it should be said there is a widespread appreciation of this danger.

Later in the same speech he said:

> I have indicated the physician and the nurse as types of special disciplines that are necessary, people who respect the individual and know when to leave him alone, but first of all they know their subject thoroughly. But

> skill and discipline are of little value unless the practitioners of good works are selected for their integrity and the high quality of their characters.

Harold Innis was the recipient of many honours, which he bor modestly, even apologetically. He was elected a Fellow of the Roya Society of Canada in 1934 and became president of that Society i 1946. He was elected president of the Canadian Political Scienc Association in 1937. In 1942 he was elected president of the Economi History Association, succeeding Edwin F. Gay, the *doyen* of America economic history. In 1944 he was awarded the Tyrrell Medal of th Royal Society of Canada. In 1949 he was appointed Beit Lecturer i Oxford University and Stamp Memorial Lecturer in the Universit of London. Honorary degrees were conferred on him by the Univer sities of Glasgow, Laval, McMaster, Manitoba, and New Brunswick

I should not leave with you this picture of the austere scholar with out a word about the man. Professor Donald Creighton, an intimat friend over many years, described him in a broadcast of the Canadia Broadcasting Corporation:

> The tall, slight figure, the unruly plume of hair, the genially sardonic smile were well known and well loved throughout Canada. To a whole host of admirers and disciples, he will be remembered not as a row of books, only partly personified, but as the most companionable and interesting of men. Nobody could relax more completely and wholeheartedly than this austere and tireless scholar: nobody ever got more interest and amusement out of a few minutes' chat, or an hour's gossipy conversation, or a long evening's talk ranging cheerfully and haphazardly over a great variety of books, and people, and places. He will be pleasantly remembered as he was on these occasions—sitting usually in a straight-backed uncushioned chair, tilting himself back occasionally and occasionally emphasizing a point in the argument with an awkward but expressive gesture of his long, strong hand. His study became a kind of clearing-house for the academic gossip of a large part of the English-speaking world. He had a great fund of stories, for men told their best anecdotes in his presence, and his own humour was rich, and generous, yet delightfully astringent. He was master of jocular irony and sly understatement. He could be sardonically funny at the expense of pretence, and pomposity, and complacence, particularly when they were cushioned in fatty deposits of wealth or position. He was good company—urbane, entertaining, stimulating.

Mr. George Ferguson, another of his intimates, described "the relaxe genial man whose entry into a room intensified the quality and gaiet of the day. He laughed easily, deep laughs from his heart, and he love other men's humor. His own was rich and sardonic. The help he ga

others he gave without measure or thought of return. His sense of personal dignity was not largely developed, though his deep sense of the integrity of freedom was unquestionable." To these I add my testimony: This great scholar was a modest man with a great gift for friendship. Hard as he worked he never seemed rushed but he always had time to talk with his friends. He was a good listener; when he spoke his words were few but pointed. His handwritten notes of congratulations were treasured by those who received them. It was in an atmosphere of friendship that his great moral and scholarly influence was unobtrusively exercised.

V. W. Bladen

University of Toronto

II

Arthur H. Cole observed recently that economic historians who achieve the presidency of this Association are much more than economic historians. Harold Innis like Edwin Gay was a man of wide interests and stimulating mind. His influence extends far beyond his writings and it would be unjust to him to stop with his written words. The following observations are based quite as much on conversations with him as on his published work; it is hoped that in this way some of the virtues of the oral tradition which he esteemed so highly may be preserved even though the written form win in the end.

It was perhaps inevitable that from the beginning Dr. Innis should attack the problems of history on a broad front. Writing as a Canadian economic historian he was constantly faced with the fact that in Canadian development the strategic decisions, the shaping influences, had always to be sought outside the country's political boundaries. Study of an economy so vulnerable to external forces made the writing of a national economic history out of the question. And there is the fact, too, that this history is marked by the absence of any break with European traditions, of alienation or turning back on the old world. Much of Canada's economic history is simply an extension of European economic history; only over the past century has it become an extension of the economic history of the United States.

Study of this "international" economy of Canada led him early in his work to the conclusion that ranking in importance and closely associated with economic influences and pulls were cultural influences and pulls, and his interest in cultural relations is apparent long before he turned from "staples" to "communications." In the shift of interest from pre-occupation with the trade routes of commerce to the trade routes of culture, from the exchange of staple commodities to the ex-

change of ideas or information, there is no suggestion of a break or lo of continuity in thought or interests.

Another element of continuity in his work is apparent in his set values, or more loosely, his likes and dislikes. There stands out in eve phase of his activity—writings, lectures, departmental administration- an intense individualism, an almost obsessive preoccupation with t virtues of unrestrained exchange (whether reference be to commoditi or ideas)—the spirit of free enquiry, the give-and-take of spontaneo discussion, faith in the creative powers of the individual left alor There is the suggestion of "ideal type" method in his writings on t aggressive commercialism of the New England fisheries and trade the North Atlantic and in his frequent references to the oral tradition Greece.

This attitude may be illustrated from his writings and is perhaps mc clearly brought out in his dislike, even contempt, for the written tra tion, his fear of the written word as frozen, final; throughout there apparent a constant struggle to break down this finality and to weak or destroy the inherent tendency to monopoly of communications whi he firmly believed to be a fatal defect of the written form. This hel to account for the absence of final or complete statement in his public tions, his impatience with orderly presentation or the continuous d velopment of narrative, his technique of juxtaposing unlike elements a means of seeking insights into process. He searched, probed, soug elements of strength and weakness, but nowhere gives any indicati of interest in constructing a system, or a theory of historical chang

Along with this individualism went an equally intense realism. The is no lack of awareness of the weakness of small units, of maritime are faced with the power of continents, or of the limitations of the city stat In the main his work centers on the history of bureaucracies, admini trative units in control of large territories, in short, empires in whi centralized control of communications has been the rule rather than t exception. How to reconcile his set of values with the survival needs large power structures was for him one of the crucial questions to asked of history. He first raised this question, I think, in his study the Northwest Company, a transcontinental fur trade organizatio which in its failure to achieve a balance necessary to reconciliation the demands of enterprising individuals in the trade with the stabili requirements of the organization, bowed out to a power more successf in its handling of the problem. The same question is writ large in h reflections on the values of Greece in the world of Rome, and althou little of this has appeared in print, in his frequent references to t amazing survival powers of the Byzantine Empire. He raises the que

tion again in his remarks on the United States in his recently published volume of essays, *Changing Concepts of Time,* whose subtitle might well have been "Washington, the Third Rome?"

There is no suggestion that the problems he was concerned with are new problems or again, that his use of communications studies as a means of understanding different cultures and economies is uncommon among social scientists. What he *did* do in his examination of the communications networks of empires, the means or mechanisms by which ideas, information, orders, commands, are given or exchanged, was to give the whole a strongly historical twist or bent and in doing so to greatly enlarge the area of enquiry both in space and in time.

As I have indicated, there is a close and logical connection between his recent work on communications and his earlier studies in Canadian economic history. How he came to shift from concern with trade and staples to the stability conditions of empires is one of the few questions relating to his work in which a simple explanation seems to be adequate. As he put it in conversation, he set out to adapt the work of J. M. Clark and Thorstein Veblen to his own field of historical investigation—technology and the price system—unused capacity as a factor in economic history—and developed in the process tools which he put to highly profitable use. He employed these with great effect in his studies of the fisheries, the fur and timber trades, canal and railway developments, the wheat economy of the prairies and the early industrialism of central Canada. It was when he turned to the new and more complex industrialism of hydro-electric power, pulp and paper, and new metals, that he felt the need of broadening his concepts, sharpening the old tools and devising new ones.

More immediately, it was in his study of the pulp and paper industry that he was driven to consider that primary medium of communication, the newspaper, and its place in economic development. A reading of his articles on the newsprint industry and the press will bring out, I think, the growing recognition on his part that in *all* his work *communications* had been, in fact, the unifying theme and that to continue in this direction he had no recourse but to turn to the study of history of media of communications, their timing and their impact. In short, study of communications seemed to be the most effective approach to an understanding of the larger environment of economic activity, and although he seemed to be moving a long way from matters normally the concern of economic historians, the economic element was never overlooked or forgotten.

It was not much more than a decade ago that he embarked on this new venture, and his work over this period bears witness to his prodigious labors and his almost frightening self-sacrifice. When I ex-

pressed misgivings as to the risks involved in this move into the large and complex area of communication systems which extend into every avenue of human experience, an area, moreover, in which experts of every stripe and color had established strong vested interests, his reply was that in spite of the imperfections which were certain to be present in this working in strange territories, experts might put right what was wrong, and much more important, that it was high time that localized monopolies of knowledge held by antiquarians and others were broken down.

It was perhaps inevitable that there should be misunderstandings and occasionally hostility, but there was cooperation too and a genuine and growing interest on the part of those who could help. And there were sufficient indications of awakening interest in alien quarters to make him reasonably certain, before his work was cut short, that the venture had not been in vain. I saw much of his correspondence over this past summer and can attest to this change, but I cannot help feeling that the years of the early 1940's must have been for him very lonely years.

In his later work, technology and pricing factors cease to provide the backbone of his enquiries and come to serve more and more as starting points. Major changes over history in the technology of communications are themselves culturally conditioned, and Innis' writings on law, religion and politics attest to the absence of the technological determinism with which he is sometimes charged; he was too aware of the close interrelations of technology with institutions and physical environment to fall into this trap. In his analysis of the determinants of change in communications systems and the consequences of such change in specific cases there was one test of performance which he invariably applied, namely, the degree or extent to which these changes strengthened the element of monopoly in communications networks, or conversely, weekened or destroyed obstacles to the free exchange of ideas or information. In his reflections on twentieth century industrialization of the means of communication in the United States, the arch-criminals are identified as vast monopolies of knowledge which, as he put it, threaten "a continuous, systematic, ruthless destruction of elements of permanence essential to cultural activity" (*Changing Concepts of Time,* p. 15).

The villain of the piece is bias in communications which in present-day North American culture is manifest in its fatal obsession with things of the present, its one-sided concern with the logistics of territorial control (whether this be geographic area or markets), its reliance on political action for the solution of all ills. Changes in communication, both in form and content, have led to a neglect of problems of duration, stability, a neglect which has destroyed empires in the past. In his own words:

Shifts in new media of communication have been characterized by profound disturbances, and the shift to radio has been no exception. An emphasis on continuity and time, in contrast with an emphasis on space, demands a concern with bureaucracy, planning, and collectivism. Without experience in meeting these demands, and appeal is made to organized force as an instrument of continuity. . . . Lack of experience with problems of continuity and empire threatens the Western world with uncertainty and war" (*The Bias of Communication*, pp. 188-89).

The tragedy of Innis is the abrupt halt to work in process by one at the height of his powers. The loss is the greater because of the author's attitude toward the written tradition, an attitude which makes prospects for completion of his edifice of thought by others exceedingly dim. Those familiar with his writings need no introduction to his method—the amassing, sifting of evidence, the intuitive flash with connection between fact and conclusion seldom clear, finally the process of working back, establishing the connection so that others may see, communicating more effectively with those who care to read. The brevity of this phase of increasing intelligibility may lessen the immediate impact of his thought and writings, but I doubt that it will reduce the force of impact in the long run, however long run be defined.

There is one aspect of his later thought which should be stressed, and that is the tendency to turn more directly to consideration of the interrelations of economic and cultural elements. There are clear indications in his more recent writings, including the unfinished paper that follows, and in conversations with him over the past year, of increasing concentration on the implications of changes in communications for economic thought and policy; questions concerning the consequences of disequilibrium in the communications area for the study of business disturbance, the strength of nationalism in economic writings ("What produces economists?"), bring out very clearly the direction in which he was proceeding at the end.

Looking back on the course he pursued so steadily, I find it difficult to escape the conclusion that some such road as that he followed is the road all economic historians will follow, if they go far enough.

W. T. EASTERBROOK

University of Toronto

III

It is not possible to discuss in a few pages Harold Innis' contribution to scholarship. I can only hint at it. Perhaps I can best do that by acknowledging the great debt which The Rockefeller Foundation owes him. He, seconded by Anne Bezanson, a Canadian on this side of the border, guided our modest grants in Canada.

I never knew a person who cared more deeply for excellence than Harold Innis. I never knew a person who had a more catholic sense of what excellence consists of than Harold Innis. He understood, as few did, the difficulty and majesty of the task in the social sciences. To him, excellence started within the individual, with what he brought of himself to the task and with what he demanded of himself. Men who dipped from shallow pools or fetid pools had no standing with him. Only the best in quality of mind, in range of outlook, in diligence at getting at all the facts, and in integrity of scholarly spirit, was good enough for him.

One of the privileges of being an officer of The Rockefeller Foundation is that such men as Innis so generously share their scholarship, their wisdom, their insight, and their integrity with us. Such counsel saves a foundation from the many mistakes that might arise from policies determined entirely from within.

From here on I will speak to you in the words of Innis himself taken from letters written by him to Foundation officers between 1940 and 1952. These words will, I think, remind us that Harold Innis was not merely a great social scientist; he was a humanist as well.

> The cultivated mind has been forfeited to the demand for superficiality; as a result, attempts to secure a proper perspective on life have been almost completely unsuccessful.
>
> . . . . .
>
> There is no appreciation whatever of the philosophical problems of statecraft in a democratic society, simply an assumption that science can tell statesmen how to push people around without its being known that they are being pushed around.
>
> Your grant to economic history was a bold, imaginative stroke designed to check the obsession with the immediate which has become the most serious menace of social science and especially of economics. The struggle for a concern with time is a struggle against tremendous odds. In the general strategy, devices must be worked out which will enable scholars to concentrate on work involving a substantial part of their lives.
>
> . . . . .
>
> As I indicated in conversation, I would hope that determined efforts could be made to prevent a further widening of the gap between the humanities and the social sciences and to bring them closer together. Failure to realize the significance of this problem implies sterility in both the humanities and the social sciences. One would hope that great efforts can be made to bring about a happier relation.
>
> . . . . .
>
> Since seeing you, I have spent two or three days with university presidents at Hamilton—Canadian Universities Congress. Seriously, your plan of

starting a consultant job to pick university presidents ought to be put into effect immediately.

. . . . . .

In Canada, university presidents are in the habit of talking about the Arts courses, and at intervals of four or five years pulling the whole structure out by the roots, and locking at them, and then replanting them and wondering why they don't flourish. If a university president would concentrate on the very important job of making appointments and defending them after they are made, the Arts courses might have a chance, but apparently that is not enough and they must spend their time setting a bad example by tinkering with courses.

. . . . . .

I have been tempted to write a blast suggesting the inevitable defeat of American policy partly based on the problem of language and propaganda. It proved impossible for Germany, as it will prove impossible for any group, to penetrate the Russian language. But there are many other factors. I do not believe that American self-confidence is sufficient to admit of wise delayed moves. The interest in propaganda defeats a masterly waiting policy, and no people can be great unless they learn when not to do things and when to do them and to have the self-confidence enabling them to make decisions in their own way and in their own time. The Romans and the British to some extent learned this.

. . . . . .

I think there are dangers in the pretensions of precision. A friend of mine has been described as more anxious to be precise than accurate, and I suspect that we are in danger of this general disease in the social sciences. As Frank Knight put it, we deal in the averages of estimates and these are not very precise. But I am afraid we deal also in specific measurements and are greatly attracted to things which can be specifically measured. For all this, of course, there is a very important place, but it is a limited place, and its limits ought to be very carefully studied.

I keep coming back to my own particular interests in what I laughingly call "research," namely, the persistent tendency in the field of knowledge and in the social sciences to build up monopoly or oligopoly situations. The literature builds up around the name of Keynes, or Marx, or someone else, and everything else is dropped. A situation responsible for these tendencies is dangerous and comes a little short of dictatorship; that is, the difference between oligopoly and monopoly is not much, but it is important. What I am wondering about is whether we can reach a position in which there is continuous discussion of vital problems. Problems cease when they become unmanageable or monopolies. And this is why I would like to see the drift toward the humanities—namely, to recognize the intensive work which has been done over the centuries and not so completely ignore it as is now done, or to put it in the form of first-year survey courses, which is probably worse. Such a drift might do something

to make one alert to the possibilities of the social science of totalitarianism which have become so threatening.

. . . . .

I have just been to Chicago (A.E.A.) and have come away disappointed. Too many papers on legislation—really a small branch of the Bar Association. Not a single comment from the floor on papers dealing with theory, suggesting that no one could understand highly mathematical papers read from the floor. Douglas gave a rather masterly presidential address.

I have been struck by the interest in aggregates and averages and the consequent decline of interest in reforms. The new interest in mass manipulation seems to be taking the zeal out of interest in reforms. In other words, reforms are now trivial matters and the concern is with legislation and administrative detail.

. . . . .

The great problem in the American Economic Association is to check this tendency to splinter groups and to split up economic knowledge into little groups with vested interests of their own in publications, and in meetings, joint or otherwise. The prospect of emphasizing a theoretical, universal, and all-inclusive approach is, in consequence, very difficult.

. . . . .

I could easily imagine Harold Innis saying to me the words once used by the late Robert Warren: "No economist is worth a damn if he doesn't have integrity."

Whatever the influence of Harold Innis effectively touched, there was quality as a result.

J. H. WILLITS

Rockefeller Foundation

THE DECLINE IN THE EFFICIENCY OF INSTRUMENTS ESSENTIAL IN EQUILIBRIUM[1]

Note: The untimely death of Professor Harold A. Innis on November 8, 1952 deprived this Association of the presidential address that he was to have delivered at the December 1952 meetings—an address which all acquainted with him or his work knew would be not only humorous and filled with incisive comments but intensely thought-provoking. However, we do have a preliminary draft of the first portion of his intended address. It should be remembered that the portion printed here was written when he was extremely weak and often in much pain. No doubt it would have been extensively revised and more closely knit together had he survived to complete it. This fragment, though very typical of the author, is essentially introductory in character. It barely reaches the point where he begins to develop his real subject and does not make clear the main thesis he had intended to expound. Fortunately, however, during the summer, he had discussed his proposed address at considerable length with his oldest son, Donald Innis, who has kindly prepared the brief summary included here, covering the main points which his father had intended to develop.

CHESTER W. WRIGHT

When my friend Bob Coats as federal statistician became president of the American Statistical Association under circumstances similar to my own in relation to this Association, he compared himself to James VI of Scotland who became, as you remember, James I of England; and he drew interesting parallels between the interventions from the north to the south in the two cases. I am too aware of the ultimate fate of the Stuarts, in particular of Charles I, the son of James, to wish to press this comparison further. But I must begin this paper with remarks which may be helpful to you in explaining its contents. A social scientist in Canada can only survive by virtue of a sense of humor. (Stephen Leacock was a logical result.) He can scarcely fail to be amused by the goings on in this country and by the antics of Great Britain, or fail to be disturbed by a realization that he can do nothing about it. Occasionally he is described in after-dinner speeches as an interpreter between the two countries as though anyone could interpret for individuals who betray such unmistakable evidence of lunacy. In a sense, perhaps, a realization that he lives in such a large insane asylum may be an indication of sanity, but it is unavoidable that he should have serious doubts about his own sanity. My old friend the late Professor Robert McQueen used to write from Winnipeg, half in earnest half in jest, "I'm depressed and fear I'm becoming known as a luncheon speaker. Can't you do something to get me an honest job?" For these reasons the

[1] Alternative titles on the manuscript are: "The Bias of Economics" and "The Menace of Absolutism in Time."

social scientist must do his best to maintain a sense of humor or a sense of balance, and if he appears on occasion to strain for effects I hope he will be forgiven. It is dangerous to appear humorous at the expense of one's elders or, as the Anglican prayer book has it, "one's betters" and I hope that anything I have said will be accepted in the proper spirit. We can at least say that we have a properly developed inferiority complex and know our places.

My appointment is a tribute to the toleration of the social sciences—a recognition of the capacity of a subject to overlook regions and nationalities and bifurcations within the social sciences even to the lowest stratum of the economic historian. An expression of this tolerance has not been achieved without recognition of the importance of political devices in checking the disastrous effects of a majority vote with concentration on the election of representatives from densely populated areas. I know that someone will be muttering that majorities also have rights, and it may be that when that awful day of judgment arrives when someone writes a doctor's thesis on the presidential addresses of this Association, as has been done for the American Historical Association, the claims of majorities will be justified.

The limitations of tolerance have of course been evident. Candid observers have expressed regrets at the relative neglect of problems of economic theory or of universal problems and the increasing prominence of sessions concerned with specifically American problems—indeed specifically American legislation. Groups with specialized interests have hived off from the Association, including a group in which I have a special interest, namely economic history, and have set up their own side shows outside the main tent; or they have seen the space outside crowded and have preferred to carve out places for themselves within the main tent and form what a predecessor of mine has called splinter groups. The climax has perhaps been reached with the selection of a president from one such group. The responsibility of the president for the general programme makes him aware of the difficulties he has created, partly through the warnings of his predecessors and partly through his own experience. In other words I am in the position of the man who was about to be hung; when he was asked whether he had anything to say, he replied "This will certainly teach me a lesson."

Having learned my lesson, I must begin by pleading for a general emphasis on a universal approach and by insisting as an economist that economic history is primarily concerned with the task of extending the universal applicability of economic theory and of strengthening a central core of interest. In the words of Plato the task of all knowledge is to discover "the limits and proportions of things." The economic historian must test the tools of economic analysis by applying them

to a broad canvas and by suggesting their possibilities and limitations when applied to other language or cultural groups. How far, for example, are we justified in asking students from other societies essentially agricultural—let us say the Chinese—to conform to the tests applied in doctorate examinations primarily reflecting the characteristics of a system which has grown up in relation to an industrial society? The problem of semantics alone compels resort to the devices of the parrot in reliance on memory. Graham Wallas as a result of his wide experience with Indian students has reminded us that the English language has only slight emotional associations for them, that examinations emphasize only phrases and words of books and that training in English for the Indian civil service probably produced results similar to the results in the Chinese civil service.[2]

Within the West itself the problem of communication is scarcely less acute. In European countries more profoundly influenced by canon law and Roman law the social sciences develop along different lines than in Anglo-Saxon common law countries. Talcott Parsons has suggested possible common ground but it may be questioned whether he recognized sufficiently the contrast between the work of Pantaleoni (and his emphasis on mathematical economics and in turn his influence on Pareto) and that of common law economists. The impact of Pareto's training in engineering and in science was evident in a concern with the mathematical approach to the social sciences. In turn Pareto was compelled to write a sociology to accompany his rational approach—a phenomenon with little precedent in the Anglo-Saxon world.

The problem of the application of theory becomes even more serious. The significance of language as a differentiating factor in Europe has probably increased with the telephone and radio. In turn statistics will vary in their significance as national groups, based to an important extent on language, tend to concentrate on the range of statistics which show their pre-eminence in various lines, particularly those which emphasize the largest elements or those increasing most rapidly in their societies. Progress has been defined as that kind of effort that can be measured in statistics. Statistics tend to take the heart out of mathematics. They are collected with relation to specific distinctive problems of states with different constitutions, federal and unitary. They are suppressed and distorted for military purposes and their value depends much on the literacy of the populations concerned. The significance of Keynesian economics to administrative systems limits possibilities of comparison. Statistical calculations which become a basis of national policy have implications for statistics compiled later in relation to the effects of the policy and make comparisons with other nations more

[2] *The Art of Thought* (London, 1926), p. 254.

difficult. Nature copies art. Monetary manipulations and tariff adjustments reflect and intensify the significance of vernaculars, particularly as effected by journalism and the radio and have their implications for statistics. We are familiar with the efforts of Colin Clark to overcome these difficulties but we can scarcely be unaware of the limitations of his work. An obsession with statistics determined by national boundaries increases the dangers of frictions of political entities.

The significance of statistics will vary with attitudes toward the state. A census may be conducted for military purposes, and the scriptural injunctions against enumeration are not without foundation; or for purposes of more adequate distribution of tax and other burdens, including railway rates. In the patriarchal traditions of Roman law the state has been regarded as an instrument of oppression and the proposals of Marx and Lenin assumed a withering of this concept of the state and substitution of the worker for the bourgeoisie. The rapidity of the spread of capitalism reflects the character of the state. In Sweden and in Australia the industrial revolution was comparatively late with the result that a soft capitalism was accompanied by nationalization, co-operative movements and labour governments. In Russia the state as an instrument of power was used conspicuously to overcome the difficulties of the frontier, notably in building the trans-Siberian railway, and much the same might be said of Canada in extending railways to the Pacific.

If we narrow our concern to countries in which common law plays an important rôle we are by no means free of difficulties. The concept of possession in common law and in German law essential to the expansion of commerce and of economics in contrast with the concept of absolute ownership in Roman law is by no means a guarantee of uniformity. Bryce remarked that

> The more any department of law lies within the domain of economic interest, the more do the rules that belong to it tend to become the same in all countries, for in the domain of economic interest Reason and Science have full play. But the more the element of human emotion enters any department of law, as for instance that which deals with the relations of husband and wife, or of parent and child, or that which defines the freedom of the individual as against the State, the greater becomes the probability that existing divergences between the laws of different countries may in that department continue, or even that new divergences may appear.[8]

Sir Frederick Pollock has pointed to the bias of the common law toward competition in that it must draw its resources from contentions between competitors. The character and frequency of disputes are important elements determining the profits of the legal profession. But Holmes

[8] Bryce, *Studies in History and Jurisprudence,* Vol. I, p. 123.

has stated that a constitution "is not intended to embody a particular economic theory whether of paternalism and its organic relation of the citizen to the state, or of *laissez-faire*." Pollock complained that case law had been largely modified by doctrines in favour among economists and publicists and that "judges ought to be very careful about committing themselves to fashionable economic theories."[4] Failure to protect themselves was almost certain in his opinion to involve mistakes to be remedied by legislative amendment which is sure to be unsatisfactory. We may well ask how far economics has become an indication of the lag between case law and public opinion and how far legislation is a result of the efforts of economists to hasten changes in case law. Certainly the enormous expansion of legislation reflects an unhappy relationship between economics and law. Many of you will be familiar with the problem of an economist who appears as a witness and who makes statements in a written brief which are regarded by lawyers as concessions to the enemy. In turn economists acting as arbitrators become annoyed with the tactics of lawyers and favour the appearance of concessions as an indication of truth.

Changes in attitudes toward common law vary as between different countries and within the same country as between different periods, and will depend to an important extent on differences in the character of economic life particularly as reflected in the division of labour and in trade. These in turn will vary with the effectiveness with which information can be made available regarding commodities to be exchanged. Highly developed media of communication will become evident in the emergence of organized exchanges but the effects of inaccurate and inadequate information will be apparent in outbursts such as the South Sea Bubble and the various phenomena described by Arthur H. Cole and Charles Mackay and such as appeared in real estate booms in the cities of this continent, especially in Western Canada, and in gold rushes.

As information was handled more efficiently dangers of fanatical outbreaks became less acute. Quetelet in 1835 commented on the influence of an expanding press in checking tendencies toward revolution. It had "singulièrement contribué à faciliter la réaction et par suite à rendre les grandes revolutions à peu près impossibles; elle presente cet avantage immense qu'elle ne permet pas aux forces de s'accummuler d'une manière effrayante, et que la reaction se manifeste presque aussitôt après l'action, quelquefois même avant que l'action ait eu le temps de se propager."[5] The invention of the telegraph and its

[4] Pollock, *Genius of the Common Law*, p. 108.

[5] A. Quetelet, *Sur L'Homme* (Paris, 1835), Vol. I, p. 290.

rapid extension in continental land areas and in submarine cables enormously enhanced the availability and the accuracy of information for the purposes of trade. It fostered demands for the equalization of accessibility. Newspapers in Chicago, especially the *Chicago Tribune,* protested vigorously in the early 'sixties against the exploitation by New York interests of the difference in time between the two cities. Western papers were compelled to pay high rates for market reports controlled by New York interests in the Associated Press of that day. The regional monopoly was gradually weakened in the latter half of the nineteenth century and came to an end finally with the formation of the Associated Press.

By this time my bias will have begun to wear thin and in fairness I should indicate its character in so far as my limitations permit. I have been primarily interested in the economic history of Canada and in particular factors which explain its peculiarities, especially the successive importance of staple raw materials to mention fur, fish, lumber, wheat, minerals and pulp and paper. I am concerned in this presidential address with the problems inherent in the pulp and paper industry as related to the production of information for purposes of trade and the efficiency of the price system. The industry occupies a peculiar position in that it is protected by the Bill of Rights in the American Constitution and by its possibilities of control over public opinion. Possible checks through the development of legislation in raw material producing regions, for example the provinces of Canada, have been offset by vertical integration in which large American newspapers control their own industrial operations in Canada.

The effects of the enormous expansion in the production of raw material following improvements in technology in the use of wood were evident in the sharp decline in prices of newsprint in the later part of the 19th century and in the expansion in the production of information by newspapers. The monopoly of the Associated Press evident chiefly in the control of morning and Republican newspapers was offset by the development of the Hearst Press and the International News Service and by the development of the cheap press concerned primarily with evening papers by the Scripps, McRae, Howard interests in the United Press. The impact on information can be suggested in one or two illustrations. Lowering of the price of the newspaper was dependent in part on the denominations of money used in various cities. In Chicago and in St. Louis the mint was persuaded to distribute quantities of pennies and department stores co-operated by advertising goods for odd amounts and thus hastening the use of small denominations. In San Francisco on the other hand Scripps papers were handicapped by customs continued from the gold rush period which implied refusal

to recognize small denominations. In the Yukon Territory as late as 1926 coins smaller than 25 cents were regarded with disfavour. The drive for cheaper information regarding prices, especially in department stores, had important implications for the currency structure and for velocity of circulation. The broad implications of prices of newsprint for the distribution of information in large cities were paralleled by developments on a wider field. During the second world war high cable rates to Australia were reduced by subsidy and the position of Australia in the information field greatly strengthened whereas the high rates to Spain were said to play an important rôle in keeping Franco out of the war.

An increase in the circulation of newspapers and a policy of low fixed prices designed to facilitate increased circulation were paralleled by the increasing importance of advertising as a source of revenue and the necessity of developing policies to attract advertising. The newspapers played an important rôle in the building up of the great department stores as distributing organizations and also in changes in the methods of production. In England for example the *Daily Mail*[6] found itself faced with the problem of finding industries with a productive capacity adequate to the demands of purchasers created by advertising. Drapers as advertisers were limited by their capacities to supply particular articles. In a systematic search for industries with relatively inexhaustible capacities of production the *Daily Mail* concentrated on the building industry and on a system of advertising developed beyond the immediate possibilities of the paper itself. The Ideal Home Exhibition was organized to supplement the newspaper. The newspaper is concerned in a search for mass production industries to meet its advertising requirements. Its position leads it to take a critical attitude towards trusts[7] as narrowing the market or towards the domination of government by powerful groups. Edward W. Bok concentrated his attention on the position of women as purchasers. He was said to have changed the physical appearance of domestic furniture, eliminated the parlor from domestic architecture and persuaded the Castles to introduce more and better dances.[8]

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HAROLD INNIS

COMMENT

During the summer I talked to my father a good deal and on several occasions we discussed the subject of his presidential address to this Associa-

[6] See Wareham Smith, *Spilt Ink* (London, 1932), pp. 67 ff.

[7] For a discussion of the suit of Lever Brothers against Northcliffe see Smith, *ibid.*

[8] Lloyd Morris, *Postscript to Yesterday—the Last Fifty Years* (New York, 1947), pp. 269-75.

tion. When I discovered that the notes which he left did not mention the subject which we had discussed I thought that I should offer to present some idea of what he had intended to say. I cannot, of course, present his idea as he would have presented it. I do not know what illustrations and stories he would have used nor can I imagine how his idea would have developed in the course of time. I shall try to present his idea with as few of my own thoughts as possible.

As the subject of his address he wanted to consider the idea that America's strongest tradition is that she has no tradition. America means the United States, but in most cases these remarks apply also to Canada. During our talks we often discussed my trip to Europe in the spring. I had been greatly impressed in Europe—especially in France where I spent most of my time—by the intense and active cultural life of the people. Plays, operas, symphonies, paintings, books and even movies seemed to be active media of communication in France. People seemed to think in terms of these arts and they seemed to regard state-supported theatres, opera houses and radio networks as normal and useful parts of their society. I asked my father why people in North America don't take much interest in these activities since they aspire to have a high level of culture. He said that Americans thought of these things as being connected with the old world and that Americans have been so anxious to be independent that they have given up a great many means of cultural expression. The American tradition involves a studied lack of interest in the culture of Europe. Actually, my father said, this lack of interest in the European traditions is in itself a tradition; and a tradition which consists of keeping oneself to oneself in both space and time is more stultifying than the traditions which Americans are trying to avoid.

Americans do not like to have any links with the past. They want to be free to question any part of their culture at any time. They do not like to have a large body of accepted opinion however sensible it may be. Americans do not want to admit that there is anything in the past which is better than anything in the present. They refuse to learn anything from the older European countries as these countries represent to Americans "the sort of thing we want to get away from." Americans want to develop a new way of life on a new continent.

The results of this desire for freedom from the past are in some ways unfortunate. My father regarded the media of communication of modern America as a sort of trap from which he could see no escape. In the field of education, for instance, a student who comes to a university is not presented with a body of knowledge which is considered to be fundamental to our society; he is encouraged to take a series of survey courses. The American tradition maintains that people should not be pushed around but Americans are so afraid of this that even the dissemination of ideas and facts is looked upon as a sort of pressure which the student must resist and from which the professor must refrain. It is only in specialized fields that professors can act as authorities. For the body of culture which is common to all citizens there are no authorities and all opinions are of equal value. No matter how carefully and objectively a study of society may be done, anyone is free to dismiss it

as just another idea. The freedom of thought which is so dearly loved in America can become freedom from thought. Politics and the arts are looked upon as subjects which may be interesting to some people and not to others. Symphonies and operas are produced for those who happen to be interested and are not thought of as expressing the culture of the country.

If the student who would learn to know America should try to educate himself through books he will find that his attention is dispersed rather than concentrated on some central trends. The student will not find books which will tell him what kind of a country America is and how new inventions affect the American ideal. Americans seem to be convinced that America is so large and complicated that no generalization can hold true for it. Americans feel that they are free of traditions and they feel that their culture is broader in scope than that of any other country which has ever existed. The booksellers and makers of books reflect this feeling clearly. Books in America tend to spread one's interests wider and wider. They do not comment on or add to a central theme which runs through American life. The attitude to be found in books on all sorts of subjects is that each book is a contribution in some small field which will interest specialists, but no book in America would claim to be of general interest and no writer would try to relate his book to the American culture as a whole. Freedom to the American means refraining from trying to discover any of the enduring characteristics of American culture. The American doesn't want to feel that he is committed to anything. Therefore his attention must always be shallow. The American student almost never finds his way out of this welter of superficiality by reading books. My father was very seriously annoyed about this. It made him feel angry and frustrated to hear the purveyors of education and information insisting on the importance of freedom of the press and of communication while using this same freedom to channel minds into the thin layer of contemporary froth which is the subject of study in American books and schools. My father felt that it would be very difficult for Americans to realize the nature of their predicament. He did not see any method of escaping from a trap in which the media of communication are the stronghold of a dogma.

Perhaps the lack of interest in gathering useful information from the past can be illustrated by referring to the rôle of newspapers in our society. My father often remarked that newspapers and superficiality are synonomous. Newspapers must always produce something new and interesting and they must never seem to be interested in anything that is old. Newspapers cannot be concerned with origins nor with the foundations of society, so that the effect of newspapers on society must be to disperse attempts at profound thinking and attempts at building up a body of tradition. My father used to say that newspapers have to keep stirring up the animals. For a potential reader to be satisfied with the contemplation of a traditional body of culture is a very unsatisfactory state of affairs for a newspaper. Newspapers are concerned with the immediate present and the immediate future and their success reflects similar interests in a large part of the population.

Radio programs reflect these tendencies and reinforce them even more.

Radio has no very long past and cannot be interested in evoking the past nor in showing the unity of past and present.

To summarize these remarks—Americans tend to be interested primarily in the present and they do not like to rely on traditional solutions to such problems as present themselves. It might be more accurate to say that Americans think of themselves as trail blazers living in a world so new that traditions can be of little value. My father felt that this attitude was very dangerous because—in so far as it exists—it deprives Americans of any criteria by which they can judge the state of their country or compare it with other countries. When definitions of progress also progress there are no standards by which progress can be measured. George Orwell's book *1984* describes a country in which the newspapers present each item of news as the fruit of progress which they depict as having always been aimed at this goal.

My father thought that the origin of America's conscious scorn for tradition derives from the tradition of the frontier. The people of the United States have built up a new country in a new continent. Americans have become rich and contented by developing the resources of the new world and they have felt that they brought about this state of well-being by the work of their own hands. Americans have felt and still feel that they owe the old world nothing. Americans do not want to be interested in the continent from which they came. They refuse to compete with European countries in art or in any other traditional means of expression. Thus the American tradition is to refuse to have a tradition. Instead of escaping from tradition America has developed and obeyed her own tradition slavishly.

The American tradition of not being interested in the past has meant a concentration on immediacy. The range of interests and means of expression of modern American culture are severely limited by her refusal to be interested in any media of communication which have been used before. America's tradition will make it very difficult for her to go beyond the narrow range of interests which she has set for herself, but until she does go beyond these limits her culture must retain the difficulties and dangers which it now has.

This idea, that America is blindly holding onto the tradition that she has no tradition, is the subject for a presidential address that my father and I discussed last summer.

DONALD INNIS

THE MEANING OF UTILITY MEASUREMENT

By Armen A. Alchian*

Economists struggling to keep abreast of current developments may well be exasperated by the resurgence of measurability of utility. After all, the indifference curve analysis was popularized little over ten years ago amidst the contradictory proclamations that it eliminated, modified, and strengthened the rôle of utility. Even yet there is confusion, induced partly by careless reading and exposition of the indifference curve analysis and partly by misunderstandings of the purposes and implications of utility measurement. This paper attempts to clarify the rôle and meaning of the recent revival of measurement of utility in economic theory and of the meaning of certain concepts and operations commonly used in utility theory.

Measurement in its broadest sense is the assignment of numbers to entities. The process of measurement has three aspects which should be distinguished at the outset. First is the purpose of measurement, second is the process by which one measures something, *i.e.*, assigns numerical values to some aspect of an entity, and the third is the arbitrariness, or uniqueness, of the set of numerical values inherent in the purpose and process. In the first part of this paper we briefly explore the idea of arbitrariness or uniqueness of numbers assigned by a measurement process. In Part II we state some purposes of utility measurement. In Part III we examine a method of measuring utility, the purpose of the measurement and the extent to which the measurement is unique. In Part IV we look at some implications of the earlier discussion.[1]

* The author is associate professor of economics at the University of California, Los Angeles. He wishes to acknowledge gratefully the aid of Norman Dalkey and Harry Markowitz, both of The RAND Corporation. The patient explanations of Dalkey in answering innumerable questions overcame early impulses to abandon the attempt to understand recent utility literature. Markowitz detected several ambiguities and errors in earlier drafts of this exposition. Since neither has seen the final draft they must be relieved of responsibility for remaining errors and ambiguities.

[1] The explanation assumes no mathematical background and is on an elementary level. This paper is not original in any of its ideas, nor is it a general review of utility and demand theory. It is merely a statement of some propositions that may help the reader separate the chaff from the wheat. It may even make clear to the reader, as it did to the writer, one meaning of utility. Most of the material presented here is contained in J. Marschak, "Rational Behavior, Uncertain Prospects and Measurable Utility," *Econometrica* (April 1950), XVIII, 111-41, an article written for the mathematically mature.

I. *Degree of Measurability*

The columns of Table I are sequences of numbers illustrating the concept of the "degree of measurability." The entities, some aspect of which we wish to measure, are denoted by letters. Later we shall discuss the meaning of these entities. Our first task is to explain the difference between monotone transformations and linear transformations.

TABLE I.—ILLUSTRATION OF TYPES OF MEASUREMENT

Entities	Alternative Measures of "Utility"								
	1	2	3	4	5	6	7	8	9
A	1	2	6	11	2	6	5	6	3
B	2	4	7	12	4	12	7	10	7
C	3	5	8	13	6	18	9	14	13
D	4	8	9	14	8	24	11	18	21
E	5	11	10	15	10	30	13	22	31
F	7	14	12	17	14	42	17	30	43
G	11	22	16	21	22	66	25	46	57
H	14	28	19	24	28	84	31	58	73
I	16	33	21	26	32	96	35	66	91
J	17	34	22	27	34	102	37	70	111

We shall begin with monotone transformations and then come to linear transformations via two of its special cases, additive and multiplicative constants.

Monotone Transformations

Let there be assigned a numerical magnitude (measure) to each entity concerned. For example in Table I, for the ten entities, A-J, listed in the extreme left-hand column, nine different sets of numbers are utilized to assign nine different numbers to each of the entities. If two sets of numbers (measures) result in the same ranking or ordering of the entities (according to the numbers assigned), then the two sets are *monotone transformations* of each other. In Table I it will be seen that all nine measures give the same ranking, thus all nine measures are monotone transformations of each other. If this property holds true over the entire class of entities concerned, then the two measures are monotone transformations of each other for that class of entities. The possible set of monotone transformations obviously is very large.

A bibliography is included, to which those who might wish to read more deeply should refer. Excellent starting points are M. Friedman and L. J. Savage, "The Utility Analysis of Choices Involving Risk," *Jour. Pol. Econ.* (Aug. 1948), LVI, 279-304, and J. Marschak, "Why 'Should' Statisticians and Businessmen Maximize 'Moral Expectation'?", *Proceedings of the Second Berkeley Symposium on Mathematical Statistics and Probability* (Berkeley, University of California Press, 1951), pp. 493-506.

Linear Transformations: Additive Constants

We shall approach the linear transformation by considering two special forms. Look at the numbers in column 3. They are the same as those in 1 except that a constant has been added, in this case 5, *i.e.*, they are the *same "up to"* (except for) an *additive constant.* The measure in column 4 is equivalent to that in column 1 with 10 added. Columns 1, 3 and 4 are *transforms* of each other "up to" (by means of) *additive constants*. This can also be expressed by saying they are equivalent except for an additive constant. The term "up to" implies that we may go through some simpler types. For example, all the transforms up to an additive constant are also contained in the larger, less restricted class of possible transforms known as monotone transforms. An additive constant is a quite strong restriction, even though it may not seem so at first since there is an unlimited number of available constants. But relative to the range of possibilities in the general linear transformations this is very restrictive indeed.

Linear Transformations: Multiplicative Constants

Now look at column 5. It is equivalent to column 1 except for multiplication by a constant, in this case, 2. Column 5 is a monotone transform of column 1, and it is also a "multiplicative by a constant" transform of column 1. Column 6 is column 1 multiplied by 6. Thus, while columns 1, 5 and 6 are monotone transforms of each other, they are also a more particular type of transform. They are transforms up to a multiplicative constant. These are special cases of linear transformations which we shall now discuss.

General Linear Transformations

The numbers of column 7 are equivalent to column 1 except for multiplication by 2 and addition of 3. Letting y denote the numbers or "measures" in column 7 and x those of column 1, we have $y = 2x + 3$. Column 8 is derived similarly from column 1; the multiplier is 4 and the added constant is 2. Column 8 is given by $4x + 2$, but a little inspection will show that column 8 can be derived from column 7 by the same process of multiplying and adding. In this case column 8 is obtained from column 7 by multiplying by 2 and adding -4. Columns 1, 7 and 8 are thus "linear transforms" of each other. This is also expressed by saying that they are the same measures "up to a linear transformation"; that is, any one of these measures can be obtained from any other one by simply selecting appropriate constants for multiplication and addition.

There is a particular property of the linear transformation that has

historical significance in economics. Look at the way the numbers change as one moves from entity to entity. For example, consider columns 1 and 7. The numerical change from entity E to entity F has a value of 2 in the measure of column 1, while in the measure of column 7, it has a numerical value of 4. From F to G the change is 4 in measure 1, and in measure 7 it is 8. If the increment is positive, it will be positive in all sequences which are linear transforms of this particular sequence. But this is true also for all monotone transformations—a much broader class of transformations or measures. Of greater significance, however, is the following attribute of linear transforms: if the differences between the numbers in one of the sequences increases (or decreases) from entity to entity, then the differences between the numbers of these same entities in all of its *linear* transformations will also be increasing (or decreasing). In general, the property of increasing or decreasing increments is not affected by switching from one sequence of numbers to any linear transformation of that given sequence. In mathematical terms, the sign of the second differences of a sequence of numbers is invariant to linear transformations of that sequence.[2] The significance of invariance will be discussed later, but we should note that this property of increasing (or decreasing) differences between the numbers assigned to pairs of entities is nothing but increasing marginal utility—if one christens the assigned numbers "utilities."

II. *Purpose of Measurement*

Order

In the nine columns of Table I are nine "different" measures of some particular aspect of the entities denoted A, B, C, . . . J. How different are they? We have already answered this. Which is the "right" one? This depends upon what one wants to do with the entities and the numbers. It would be more useful to ask which one is a *satisfactory* measure, for then it is clear that we must make explicit for what it is to be satisfactory.[3] For example, if my sole concern were to predict which of the entities would be the heaviest, the next heaviest, etc., I could, by successively comparing pairs in a balancing scale, completely order the entities. [Having done so, I could then assign the numbers in *any* one of columns 1 through 9] so long as I assign the biggest number to the heaviest, and so on down. This means that for the purpose of indicating *order,* any one of the monotone transforms is acceptable.

[2] In monotonic transformations the sign of the *first* differences only are necessarily left undisturbed.

[3] A pause to reflect will reveal that there is a second problem besides that of deciding what "satisfactory" means. This second problem, which we have so far begged, is: "How does one assign numbers to entities?" It is deferred to the following section.

The remaining task is to determine whether the order is "correctly" stated; the fact that the order is the same, no matter which one of the above transforms is used, does not imply that the order is correct. What do we mean by "correctly"? We mean that our stated or predicted order is matched by the order revealed by some other observable ordering process. You could put the entities on some new weighing scales (the new scales are the "test"), and then a matching of the order derived from the new scales with our stated order is a verification of the correctness (predictive validity) of our first ordering. Any monotone transform of one valid ordering number sequence is *for the purpose* in this illustration *completely equivalent* to the numbers actually used. That is, any one of the possible monotone transformations is just as good as any other.

We may summarize by saying that, given a method for validly ordering entities, any monotone transformation of the particular numerical values assigned in the ordering process will be equally satisfactory. We may be technical and say that "all measures of order are equivalent up to (except for being) monotone transformations." Or, in other words, a method of validly denoting *order* only, is not capable of uniquely identifying a particular set of numbers as *the* correct one. Any monotonic transformation will do exactly as well. The degree of uniqueness of an ordering can also be described by saying it is only as unique as the set of monotone transformations. Thus, we often see the expression that "ordering is unique up to a monotone transformation."

Ordering Groups of Entities

But suppose our purpose were different. Suppose we want to be able to order *groups* of entities according to their weights. More precisely, suppose we want to assign numbers to each of the component objects so that when we combine the objects into sets or bundles we can order the weights of the composite bundles, knowing only the individually valid numbers assigned to each component, by *merely adding* together the numbers assigned to each component. And we want to be able to do this for any possible combination of the objects. Fortunately, man has discerned a way to do this for weights. The numbers which are assigned by this discovered process are arbitrary up to a multiplicative constant (of proportionality), so that the numbers could express either pounds, ounces, tons or grams. That is, we can arbitrarily multiply all the numbers assigned to the various components by any constant we please, without destroying the validity of our resulting numbers for this particular purpose. But we can not use any monotone transformation as we could in the preceding case where our purpose was different.

If we were to add an arbitrary constant to each component's indi-

vidually valid numerical (weight) value we would not be able to add the resulting numbers of each component in order to get a number which would rank the composite bundles. Thus, the numbers we can assign are rather severely constrained. We can not use any linear transformation, but we can use a multiplicative constant, which is a special type of linear transformation. And if we were to "measure" lengths of items so as to be able simply to "add" the numbers to get the lengths of the items laid end to end, we would again find ourselves confined to sequences (measures) with a multiplicative constant as the one available degree of arbitrariness.

Utility and Ordering of Choices

The reader has merely to substitute for the concept of weight, in the earlier example about weight orders, the idea of "preference" and he is in the theory of choice or demand. Economics goes a step further and gives the name "utility" to the numbers. Can we assign a set of numbers (measures) to the various entities and predict that the entity with the largest assigned number (measure) will be chosen? If so, we could christen this measure "utility" and then assert that choices are made so as to maximize utility. It is an easy step to the statement that "you are maximizing your utility," which says no more than that your choice is predictable according to the size of some assigned numbers.[4] For analytical convenience it is customary to postulate that an individual seeks to maximize something subject to some constraints. The thing—or numerical measure of the "thing"—which he seeks to maximize is called "utility." Whether or not utility is some kind of glow or warmth, or happiness, is here irrelevant; all that counts is that we can assign numbers to entities or conditions which a person can strive to realize. Then we say the individual seeks to maximize some function of those numbers. Unfortunately, the term "utility" has by now acquired so many connotations, that it is difficult to realize that for present purposes utility has no more meaning than this. The analysis of individual demand behavior is mathematically describable as the process of maximizing some quantitive measures, or numbers, and we assume that the individual seeks to obtain that combination with the highest choice number, given the purchasing power at his disposal. It might be harmless to call this "utility theory."[5]

[4] The difficult (impossible?) psychological, philosophical step of relating this kind of utility to some *quantity* of *satisfaction, happiness, goodness* or *welfare* is not attempted here.

[5] The author, having so far kept his opinions submerged, is unable to avoid remarking that it would seem "better" to confine utility "theory" to attempts to explain or discern why a person chooses one thing rather than another—at equal price.

Three Types of Choice Predictions

Sure Prospects. Before proceeding further it is necessary to indicate clearly the types of choice that will concern us. The first type of choice is that of selecting among a set of alternative "riskless" choices. A riskless choice, hereafter called a sure prospect, is one such that the chooser knows exactly what he will surely get with each possible choice. To be able to predict the preferred choice means we can assign numbers to the various entities such that the entity with the largest assigned number is the most preferred, the one with the second largest number is the next most preferred, etc. As said earlier, it is customary to christen this numerical magnitude with the name "utility."

An understanding of what is meant by "entity" is essential. An entity denotes any specifiable object, action, event, or set or pattern of such items or actions. It may be an orange, a television set, a glass of milk, a trip to Europe, a particular time profile of income or consumption (*e.g.*, steak every night, or ham every night, or steak and ham on alternate nights), getting married, etc. Identifying an entity exclusively with one single event or action would lead to unnecessary restrictions on the scope of the applicability of the theorem to be presented later.[6]

Groups of Sure Prospects. A second problem of choice prediction would be that of ordering (predicting) choices among riskless *groups* of entities. A riskless group consists of several entities all of which will be surely obtained if that group is chosen. The problem now is to predict the choice among riskless groups knowing only the utilities assigned to the individual entities which have been aggregated into groups. Thus if in Table I we were to assemble the entities A through J into various groups, could we predict the choice among these groups of entities knowing only the utility numbers that were assigned to the component entities for the purpose of the preceding choice problem? Of course we ask this question only on the assumption that the utilities previously assigned to the component entities were valid predictors of choice among the single sure prospects.[7]

Uncertain Prospects. A third type of problem is that of ordering choices among risky choices, or what have been called uncertain prospects. An uncertain prospect is a group of entities, only one entity of

[6] For example, see H. Wold, "Ordinal Preferences or Cardinal Utility? (With Additional Notes by G. L. S. Shackle, L. J. Savage, and H. Wold)"; A. S. Manne, "The Strong Independence Assumption-Gasoline Blends and Probability Mixtures (with Additional Notes by A. Charnes)"; P. Samuelson, "Probability, Utility, and the Independence Axiom"; E. Malinvaud, "Note on Neumann-Morgenstern's Strong Independence Axiom," *Econometrica* (Oct. 1952), XX, 661-79.

[7] For an illustration of this problem of rating a composite bundle by means of the ratings of the ratings of the components, see A. S. Manne, *op. cit.*

which will be realized if that group is chosen. For example, an uncertain prospect might consist of a fountain pen, a radio and an automobile. If that uncertain prospect is chosen, the chooser will surely get one of the three entities, but which one he will actually get is not known in advance. He is not completely ignorant about what will be realized, for it is assumed that he knows the probabilities of realization attached to each of the component entities in an uncertain prospect. For example, the probabilities might have been .5 for the fountain pen, .4 for the radio and .1 for the automobile. These probabilities sum to

TABLE II.—EXAMPLES OF UNCERTAIN PROSPECTS

Uncertain Prospect	Probabilities of getting		
	Pen	Radio	Automobile
1	.5	.4	.1
2	.58	.30	.12
3	.85	.0	.15
4	.0	.99	.01

1.0; one and only one of these entities will be realized. An uncertain prospect is very much like a ticket in a lottery. If there is but one prize, then the uncertain prospect consists of two entities, the prize or the loss of the stake. If there are several prizes, the uncertain prospect consists of several entities—the various prizes and, of course, the loss of the stake (being a loser).

But there is another requirement that we want our prediction process to satisfy. Not only must we be able to predict the choices, but we want to do it in a very simple way. Specifically, we want to be able to look at each component separately, and then from utility measures assigned to the elements, as if they were sure prospects, we want to be able to aggregate the component utility measures into a group utility measure predicting choices among the uncertain prospects. For example, suppose the uncertain prospects consisted of a pen, a radio and an automobile as listed in Table II.

Are there utilities which can be assigned to the pen, the radio and the automobile, so that for the purpose of comparing these four uncertain prospects the same numbers could be used in arriving at utility numbers to be assigned to the uncertain prospects? In particular, can we assign to the pen, the radio and the automobile numbers such that when multiplied by the associated probabilities in each uncertain prospect they will yield a sum (expected utility) for each uncertain prospect, and such that these "expected utilities" would indicate preference?

Before answering we shall briefly indicate why choices among uncertain prospects constitute an important class of situations. Upon reflection it will be seen to be the practically universal problem of choice. Can the reader think of many cases in which he *knows* when making a choice, the outcome of that choice with absolute certainty? In other words, are there many choices—or actions—in life in which the *consequences* can be predicted with absolute certainty? Even the act of purchasing a loaf of bread has an element of uncertainty in its consequences; even the act of paying one's taxes has an element of uncertainty in the consequences involved; even the decision to sit down has an element of uncertainty in the consequence. But to leave the trivial, consider the choice of occupation, purchase of an automobile, house, durable goods, business investment, marriage, having children, insurance, gambling, etc. ad infinitum. Clearly choices among uncertain prospects constitute an extremely large and important class of choices.

III. *Method of Measurement*

So far we have discussed the meaning and purpose of measurement. We turn to the method of measurement recognizing that for each type of choice prediction the method of measurement must have a rationale as well as a purpose. For a moment we can concentrate on the rationale which is properly stated in the form of axioms defining rational behavior.

Sure Prospects

Let us start with a rationale for the first type of choice. We postulate that an individual behaves consistently, *i.e.*, he has a consistent set of preferences; that these preferences are transitive, *i.e.*, if B is preferred to A, and C to B, then C is preferred to A; and that these preferences can be completely described merely by attaching a numerical value to each. An implication of these postulates is that for such individuals we can predict their choices by a numerical variable (utility). Asking the individual to make pairwise comparisons we assign numbers to the sure prospects such that the choice order will be revealed by the size of the numbers attached. The number of pairwise comparisons that the individual must make depends upon how fortunate we are in selecting the pairs for his comparison. If we are so lucky as first to present him a series of pairs of alternatives of sure prospects exactly matching his preference order, the complete ordering of his preferences will be obtained with the minimal amount of pairwise comparisons. Any numbering sequence which gives the most preferred sure prospect the highest number, the second preferred sure prospect the second highest number, etc., will predict his choices according to "utility maximiza-

tion." But any other sequence of numbers could be used so long as it is a *monotone transformation* of the first sequence. And this is exactly the meaning of the statement that utility is *ordinal* and not cardinal. The transitivity postulate enables this pairwise comparison to reveal the complete order of preferences, and the consistency postulate means he would make his choices according to the prediction. Thus if he were to be presented with any two of ten sure prospects, we would predict his taking the one with the higher utility number. If our prediction failed, then one of our postulates would have been denied, and our prediction method would not be valid. A hidden postulate is that the preferences, if transitive and consistent, are stable for the interval involved.[8] Utility for this purpose and by this method is measurable up to a monotonic transformation, *i.e.*, it is ordinal only.

Groups of Sure Prospects

The second type of choice, among *groups* of sure prospects, can be predicted using the same postulates only if we treat each group of sure prospects as a sure prospect. Then by presenting pairs of "groups of sure prospects" we can proceed as in the preceding problem. But the interesting problem here is that of predicting choice among groups of sure prospects (entities) only by knowing valid utility measures for choices among the component sure prospects. Can these utility numbers of the component entities of the group of sure prospects, which are valid for the entities by themselves, be aggregated to obtain a number predicting choice among the groups of sure prospects? In general the answer is "no." Hence, although utility was measurable for the purpose of the kind of prediction in the preceding problem, it is not measurable in the sense that these component measures can be aggregated or combined in any known way to predict choices among *groups* of sure prospects. Utility is "measurable" for one purpose but not for the other.[9]

[8] Some problems involved in this assumption and in its relaxation are discussed by N. Geogescu-Roegen, "The Theory of Choice and the Constancy of Economic Laws," *Quart. Jour. Econ.* (Feb. 1950), LXIV, 125-38.

[9] It is notable that the usual indifference curve analysis is contained in this case. Any *group* of sure prospects (point in the xy plane of an indifference curve diagram) which has more of each element in it than there is in another group of two sure prospects, will be preferred to the latter. And further, if one group of sure prospects has more of one commodity than does the other group of sure prospects, the two groups can be made indifferent by sufficiently increasing the amount of the second commodity in the other group of sure prospects. The indifference curve (utility isoquant) approach does not assign numbers representing utility to the various sure prospects lying along either the horizontal or the vertical axis and then from these numerical values somehow obtain a number which would order choices among the groups of prospects inside the quadrant enclosed by the axes.

Uncertain Prospects

We want to predict choices among uncertain prospects. And we want to make these predictions solely on the basis of the utilities and probabilities attached to the elements of the uncertain prospects.

Without going into too many details an intuitive idea of the content of the axioms used in deriving this kind of measurability will now be given.[10] For expository convenience the statement that the two entities A and B are equally desirable or indifferent will be expressed by A = B; if however A is either preferred to or indifferent to B, the expression will be A $\geq$ B.

(1) For the chooser there is a transitive, complete ordering of all the alternative possible choices so far as his preferences are concerned. That is if C $\geq$ B and B $\geq$ A, then C $\geq$ A.

(2) If among three entities, A, B, and C, C $\geq$ B, and B $\geq$ A, then there is some probability value *p*, for which B is just as desirable as the uncertain prospect consisting of A and C, where A is realizable with probability *p*, and C with probability *l-p*. In our notation: if C $\geq$ B and B $\geq$ A, then there is some *p* for which B = (A, C; *p*), where (A, C; *p*) is the expression for the uncertain prospect in which A will be realized with probability *p*, and otherwise, C will be realized.

(3) Suppose B $\geqq$ A, and let C be any entity. Then (B, C; *p*) $\geqq$ (A, C; *p*) for any *p*. In particular, if A = B, then the prospect comprising A and C, with probability *p* for A and *1-p* for C, will be just as desirable as the uncertain prospect comprised of B and C, with the same probability *p* for B, and *1-p* for C.

(4) In the uncertain prospect comprising A and B with probability *p* for A, it makes no difference what the process is for determining whether A or B is received, just so long as the value of *p* is not changed. Notationally, (A, B; p_1), B; p_2) = (A, B; $p_1 p_2$).

To help understand what these axioms signify we give an example of behavior or situation that is inconsistent with each, except that I can think of no totally unreasonable behavior inconsistent with the first axiom. Behavior inconsistent with the second axiom would be the following: Suppose C is two bars of candy, B is one bar of candy, and A is being shot in the head. Form an uncertain prospect of C and A with probability *p* for C. If there is no *p*, however small or close to zero, which could possibly make one indifferent between the uncertain

[10] This is the method developed by J. von Neumann and P. Morgenstern, *The Theory of Games and Economic Behavior* (Princeton University Press, 1944). A very closely analogous method was suggested in 1926 by F. Ramsey, *The Foundations of Mathematics and Other Logical Essays* (The Humanities Press, N. Y., 1950), pp. 166-90. The neatest, but still very difficult, exposition is by J. Marschak, *op. cit.* Still another statement of essentially the same set of axioms is in Friedman and Savage, *op. cit.*

prospect and B, the one bar of candy, he is rejecting axiom (2). Are such situations purely hypothetical?

The third axiom, sometimes called the "strong independence assumption," has provoked the most vigorous attack and defense. So far no really damaging criticism has been seen. It takes its name from the implication that whatever may be the entity, C, it has no effect on the ranking of the uncertain prospects comprised of A or C and B or C. This kind of independence has nothing whatever to do with independence or complementarity among groups of commodities. Here one does not receive both A and C, or B and C. He gets either A or C in one uncertain prospect, or he gets either B or C in the other. Even if A and C were complements and B and C were substitutes, the ordering would not be affected—this is what the postulate asserts.[11]

Axiom (3) is inconsistent with a situation in which the utility of the act of winning itself depends upon the probability of winning, or more generally if probability itself has utility. For example, at Christmas time, one does not want to know what gift his wife is going to give him; he prefers ignorance to any hints or certainty as to what his gift will be. This is a type of love for gambling. Conversely, one may be indifferent to whether he gets roast beef or ham for dinner, but he does want to know which it will be purely for the sake of knowing, not because it will affect any prior or subsequent choices.

Axiom (4) is inconsistent with a concern or difference in feeling about different ways of determining which entity in an uncertain prospect is actually received even though the various systems all have the same probability. For example, suppose an uncertain prospect had a probability of .25 for one of the entities. It should make no difference whether the probability is based on the toss of two successive coins with heads required on both, or whether it is based on the draw of one white ball from an urn containing one white and three black. But consider the case of the slot machine. Why are there three wheels with many items on each wheel? Why not one big wheel, and why are the spinning wheels in sight? One could instead have a machine with covered wheels. Simply insert a coin, pull the handle and then wait and see what comes out of the machine. Does seeing the wheels go around or seeing how close one came to nearly winning affect the desirability? If observation or knowledge of the number of steps through which the mechanism must pass before reaching the final decision makes any difference, even if the fundamental probability is not subjectively or objectively affected, then axiom (4) is denied.

Implied in the stated axioms is a method for assigning numerical

[11] See the literature listed in footnote 6.

utility values to the various component entities. The method is perhaps explained best by an illustration of the method using the entities of Table I. Take one entity, A, and one other, say B, as the two base entities. Between these two entities you choose B as preferable to A. Now I *arbitrarily* assign (*i.e.*, choose any numbers I wish so long as the number for B exceeds that for A) the number 2 to B and some smaller number, say 1, to A. You then consider entity C, which you assert you prefer to A and to B. The next step is rather involved; I now form an uncertain prospect consisting of C and A. You are now offered a choice between B, a sure prospect, and the uncertain prospect comprised of "A or C", where you get A or C depending upon the outcome of a random draw in which the probability of A is p, otherwise you get C.

You are asked to, and you do, select a value of p which when contained in the uncertain prospect leaves you indifferent between B and the uncertain prospect, "A or C."[12] If p were set at nearly zero, you would choose the uncertain prospect, since C is assumed here to be preferred to A; choosing the uncertain prospect would mean that you would almost surely get C. The converse would be the outcome if p were set at nearly 1. Therefore, some place in between there is a value of p which would leave you indifferent between B and the uncertain prospect of "A or C." After you indicate that value of p, I assign to the uncertain prospect the same number, 2, I did to B since they are equally preferred by you.

Now we may determine a number for C by the following procedure. Treat the probability p, and its complement $1\text{-}p$, as weights to be assigned to the numbers for A and C such that the weighted sum is equal to the number 2, which has been assigned to the uncertain prospect. If, for example, you were indifferent when p was equal to .6, then we have the following definitional equation, where we let U(A) stand for the number assigned to A, U(B) for the number assigned to B, and U(C) for the number assigned to C:

$$U(B) = p \cdot U(A) + (1\text{-}p) \cdot U(C)$$

$$\frac{U(B) - p \cdot U(A)}{(1\text{-}p)} = U(C) = 3.5.$$

Using this convenient formula we can assign numbers to the entities D, E, F by appropriately forming uncertain prospects and letting you determine that value of p which produced indifference. These revealed

[12] It is important to notice that the sure prospect must not be preferred to both of the components of the uncertain prospects, for in that event no probability value would induce indifference.

numbers will completely order the entities. If E has a larger number than G, E will be preferred over G. This assignment of numerical value is made without ever comparing E and G directly. Each has been compared with a base entity. A brief pause to reflect will reveal that in this paragraph we have been specifying a convenient method for manipulating, or combining the "utilities" or "choice indicator numbers" as well as specifying a process of attaching numbers (utilities) to the entities.

It happens that if we insist on using the simple formula above, rather than some more complicated one, the numerical magnitudes assigned by this process are unique up to a linear transformation. For example, suppose that by our process of assigning numbers we obtained the set of numbers in column 3 of Table I for entities A to J. Now, instead of assigning 7 and 6 to B and A, had we decided in the first place to assign a value of 7 to entity B and a value of 5 to entity A, we could have obtained instead the sequence in column 7. Column 7 is a linear transformation of column 3. In other words, we may arbitrarily, at our complete discretion, assign numbers to *two* of the entities; once that has been done, our method will determine the remaining unique numbers to be assigned. But all the various *sets* of numbers (utilities) that could have been obtained, depending upon the two initial numerical values, are linear transformations of each other. Thus, our measurement process is unique "up to" a linear transformation.

If the preceding method of assigning numbers does predict correctly the choice a person actually makes among uncertain prospects, then we have successfully assigned numbers as indicators of choice preferences. We have successfully measured utility and have done it with the convenient computational formula above. Furthermore, every linear transformation of our predicting numbers, "utilities," would be equally valid—or invalid.

In summary, (1) we have found a *way* to assign numbers; (2) for the way suggested, it so happens that the assigned numbers are unique up to linear transformations; (3) the numbers are convenient to manipulate. All this was implicit in our set of postulates. Before asking whether the numbers predict actual behavior, we shall discuss some side issues.

Diminishing or Increasing Marginal Utility

Recalling our earlier exposition of the mathematical properties of linear transformations, we see that in all of the columns (except 2 and 9 which are not linear transformations of the others) the pattern of *increments* between the numbers assigned to entities is similar. For example, between pair H and I on scale 7 the increment is 4 and be-

tween pair I and J it is 2. Moving from H through I to J we have a diminishing increment in the numerical magnitudes assigned. In more familiar terminology we have diminishing marginal utility among H, I and J.[13] Similarly, all the linear transforms of scale 7 will retain this diminishing marginal utility over the range of entities H, I and J. And the suggested way of assigning numbers to the component entities assigns numbers (utilities) which are equivalent up to a linear transformation; that is, any one of the linear transformations will be just as good—for our purposes—as any other of them. By implication we can determine whether there is diminishing or increasing marginal utility.

Maximization of Expected Utility

By this method of assigning utilities we have ordered all the entities. However, our purpose was more than this; otherwise the uniqueness of the numbers up to a linear transformation would have been an unnecessary restriction. As we know, any monotonic transformation would leave order unaffected. The linear transformation restriction is imposed by our desire to predict choices among uncertain prospects from the utilities and probabilities of the component entities and to do it in a convenient form, *viz.*, according to maximization of expected utility.[14]

Implied in our set of postulates is not only the preceding method of assigning numbers for utilities but also (in fact the two are merely two aspects of the same implication) a method for combining the utilities of the component entities into a utility number for the uncertain prospect.

This method is based on the implication that a person who behaves according to the axioms will choose among uncertain prospects according to expected utility. Expected utility is merely the sum of the weighted utilities of the components of the uncertain prospects where the weights are the probabilities associated with each component. In symbolic form

$$U(A \text{ or } B, p) = p\, U(A) + (1\text{-}p)\, U(B)$$

where the expression $U(A \text{ or } B, p)$ denotes the utility of the uncertain prospect of entities A and B in which A will be received with probability p, and B otherwise. For example, we could from any one of our measures in Table I (except columns 2 and 9) predict what one would do when faced with the following choice: he is presented first with an

[13] More strictly we should also have some scale for measuring the amount of H, I and J, either in weight or volume, etc. While the process for assigning these scales also is a complex one, we may pass over it in order to concentrate upon the "utility" measure.

[14] It is not dictated by any nostalgia for diminishing marginal utility.

uncertain prospect containing entities B and C. If he chooses this prospect, his probability of getting B is one-half; otherwise, he will get C. The other uncertain prospect which he is offered contains entities A and E, and if he chooses this prospect his probability of getting *F* is one-fourth—otherwise, he gets A. Our individual will choose the first prospect, no matter which of our acceptable measures we use. We obtain this prediction by multiplying (weighting) the "utility" measures of each entity in each prospect by the probability of that entity. If we use the utility measure of column 8, we have for the first prospect $(\frac{1}{2} \times 14) + (\frac{1}{2} \times 10) = 12$, and for the second prospect, $(\frac{3}{4} \times 6) + (\frac{1}{4} \times 22) = 10$. The first prospect has the larger expected "utility" and will be chosen.[15] How can we justify this procedure of adding the products of probabilities and "measures of utilities" of entities in an uncertain prospect and calling the result "the utility" of the uncertain prospect? The axioms of human behavior on which it is based are those which earlier gave us the procedure for "measuring utility" up to a linear transformation.[16]

Another way to express this implication that a rational person chooses among uncertain prospects so as to maximize expected utility is in terms of the implied shapes of indifference curves in the plane of *probabilities* of the various components of the uncertain prospects.

Suppose that I am indifferent between receiving a watch and receiving \$30.00. In Figure 1a, the horizontal scale measures the probability with which I will get \$30.00 and the vertical axis measures the probability with which I will get the watch. The origin represents the point at which I am sure to get nothing. The point W on the vertical axis presents the situation in which I am sure to get the watch and not get the \$30.00. The point M on the horizontal axis represents the situation in which I am sure to get the money and am sure not to get the watch. A straight line drawn from W to M represents all the various uncertain prospects in which I might get the watch or I might get the money, where the probabilities are given by the horizontal distance for

[15] If column 9 had been used, the chooser would have been declared indifferent, *i.e.*, the two combinations have equal utility. This is inconsistent with the utility value and predictions derived from the measures in the other columns.

[16] If our task is merely to order choice among the uncertain prospects, we could, after obtaining the expected utility of the prospect, obviously perform any monotonic transformation on it without upsetting the order of choices among the uncertain prospects. However, there seems little point in doing so, and there is good reason not to do so. In particular one might wish to predict choices among groups of uncertain prospects where, in each group of prospects, the entities are themselves uncertain prospects. This combination of several uncertain prospects into one resultant uncertain prospect is a consistent operation under the preceding postulates, and the utility measures attached to it will have an implied validity if the utility measures attached to the component prospects, derived in the manner indicated earlier, are valid.

the money and the vertical distance for the watch. Thus, the point P represents the prospect in which I will get the watch with probability ⅔ or otherwise the money (with probability ⅓). The preceding axioms imply that this straight line is an indifference line or utility isoquant. In other words, the utility isoquant is a *straight* line in the space of probabilities, in this case a straight line from one sure prospect (the watch with certainty) to the other equally sure prospect (the $30.00 with certainty).

The straight line utility isoquants need not go from sure prospect to sure prospect, as can be seen from a second example. Suppose that I am

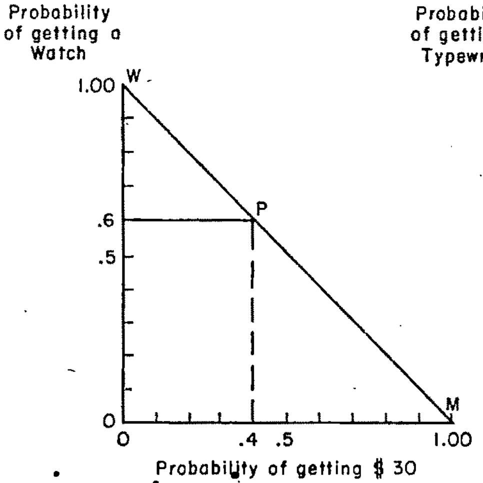

Fig. 1a

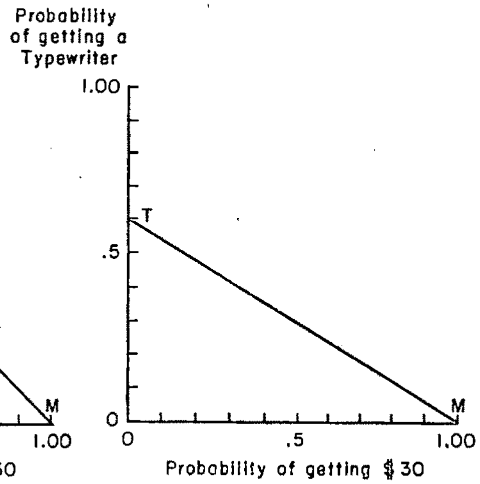

Fig. 1b

indifferent between receiving $30.00 with certainty (sure prospect of $30.00) and the uncertain prospect in which I will get a particular typewriter with probability .6 and nothing with probability .4. In Figure 1b, this latter uncertain prospect is T on the vertical axis. Since I am indifferent between this uncertain prospect T and the $30.00 with certainty (point M) a straight line, TM, is a utility isoquant, and all prospects represented by the points on that line are indifferent to me—have the same utility. In summary, in any such figure, a straight line through any two equally preferred prospects will also contain all prospects (certain and uncertain) that are equally preferred to the first two. This can be generalized into three and more dimensions in which case the straight line becomes a plane surface in three or more dimensions.

The additivity of the simple weighted (by probabilities of the components of the entities) "utilities" enables us to call this composite

utility function a linear utility function. This means that the measure of "utility" of uncertain prospects (in a probability sense) of entities is the sum of the "expectation" of the "utilities" of the component entities; it does not mean that our numerical numbers (measuring utility) assigned to the entities are linear functions of the physical amounts (*e.g.*, weights or counts) of the magnitude entities. Here linearity means that the utility of the uncertain prospects is a linear function of the utility of the component entities; incidentally the utility function is also a linear function of the probabilities of the entities.

IV. *Validity of Measurement*

Has anyone ever succeeded in assigning numbers in this way and did the sequence based on past observations predict accurately the preferences revealed by an *actual* choice among new and genuinely available prospects? The only test of the validity of this whole procedure, of which the author is aware, was performed by Mosteller and Nogee.[17]

The essence of the Mosteller-Nogee experiment was to subject approximately 20 Harvard students and National Guardsmen to the type of choices (indicated above on pages 37-39 required to obtain a utility measure for different entities. In the experiment, the entities were small amounts of money, so that what was being sought was a numerical value of utility to be attached to different amounts of money. After obtaining for each individual a utility measure for various amounts of money, Mosteller and Nogee predicted how each individual would choose among a set of uncertain prospects, where the entities were amounts of money with associated probabilities. Although some predictions were incorrect, a sufficiently large majority of correct predictions led Mosteller and Nogee to conclude that the subjects did choose among uncertain prospects on the basis of the utilities of the amounts of money involved and the probabilities associated with each, *i.e.*, according to maximized expected utility. Perhaps the most important lesson of the experiment was the extreme difficulty of making a really good test of the validity of the implications of the axioms about behavior.

Whether this process will predict choice in any other situation is still unverified. But we can expect it to fail where there are pleasures of gambling and risk-taking, possibly a large class of situations. Pleasures of gambling refers not to the advantages that incur from the possibility of receiving large gains, but rather to the pleasure of the act of gambling or act of taking on extra risk itself. There may be an

[17] F. Mosteller and P. Nogee, "An Experimental Measurement of Utility," *Jour. Pol. Econ.* (Oct. 1951), LIX, 371-404.

exhilaration accompanying sheer chance-taking or winning per se as distinct from the utility of the amount won. Even worse, the preference pattern may change with experience.

V. *Utility of Income*

We can conclude our general exposition with the observation that although the preceding discussion has referred to "entities" we could have always been thinking of different amounts of income or wealth. The reason we did not was that we wanted to emphasize the generality of the choice problem and to emphasize that utility measures are essentially nothing but choice indicators. However, it is useful to consider the utility of income. How do the numerical values (utilities) assigned by the preceding method vary as income varies? Now this apparently sensible question is ambiguous, even after our preceding discussion which we presume to have eliminated confusion about the meaning of "measurability of utility." For the question still remains as to whether the utility measure assumes (1) a utility curve that stays put and along which one can move up and down as income varies; or, (2) a utility curve whose shape is definable only on the basis of the current income as a reference point for change in levels of income. The former interpretation emphasizes dependence of utility on levels of income, while the latter emphasizes the dependence of utility on the changes in income around one's present position.

The most common type of utility curve has been one whose shape and position is independent of the particular income actually being realized at the time the curve of utility of income is constructed. For example, Friedman and Savage draw a utility curve dependent primarily upon levels of income rather than upon changes in income, and it is presumed that individuals choose as if they were moving along that curve.[18] The generic shape of the curve postulated by Friedman and Savage is shown in Figure 2.[19] This shape is supposed to explain the presence of both gambling and insurance. How does it do this?

Reference back to our method of predicting choices among uncertain prospects reminds us that choices will be made so as to maximize expected utility. A graphic interpretation is very simple. In Figure 2, let the income position now existing be A; let the individual be faced with a choice of staying where he is, or of choosing the uncertain prospect of moving to income position B with probability .999 or of moving to income position C with probability .001. Position A represents paying fire insurance, while positions C and B form the uncertain prospect where C is the position if a fire occurs with no insurance and B is the position if no fire occurs with no insurance.

[18] *Op. cit.*

[19] The utility curve is unique up to a linear transformation.

Will he choose the uncertain prospect or the sure position A? The basis for the choice as implied in our postulates can be described graphically as follows: From point B′ draw a straight line to point C′. This straight line gives the expected utility of all uncertain prospects of the incomes B and C as the probability attached to C varies from zero to one. The point on this straight line yielding the expected utility of our uncertain prospect can be found by computing the expected *income*, D; and then rising vertically to point D′ on the straight line

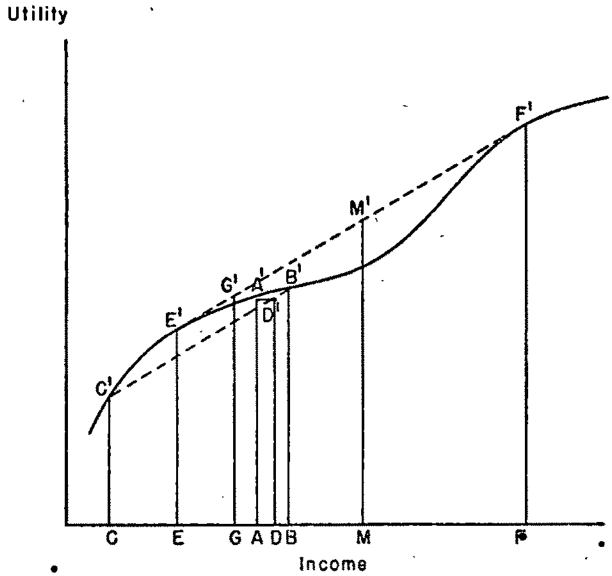

Fig. 2

B′C′. The ordinate DD′ is the expected utility of the uncertain prospect. If the length of DD′ is less than AA′, as it is in our example, where AA′ denotes the utility of the income after taking insurance, then the person will choose the insurance and conversely.

It is apparent that if the utility curve were always convex as in the first and last part of the curve in Figure 2, a person would never choose an uncertain prospect whose expected income was no greater than the insured income position. And if the curve were concave, a person would always choose the uncertain prospect where the expected income was at least equal to the present insured position.

If the curve has the shape postulated by Friedman and Savage, it is possible to explain why a person will take out insurance and will at the same time engage in a gamble. To see how the latter is possible, suppose a person were at position A. At the same time that he might be willing to take out insurance he may also be willing to gamble by

choosing an uncertain prospect of ending up at E or F, despite its lower expected income at G, because the expected utility GG′ of the uncertain prospect is larger than the utility AA′ of position A. Friedman and Savage tentatively attempt to lend some plausibility to this shape of utility curve by conjuring that economic society may be divisible into two general income level classes, the lower one being characterized by the first convex part of the curve and the higher one by the upper convex section. An intermediate group is in the concave section.

H. Markowitz has pointed out certain unusual implications of the Friedman-Savage hypothesis.[20] A person at the point M would take a fair bet with a chance to get to F. This seems unlikely to be verified by actual behavior. Secondly, if a person is at a position a little below F, he will not want insurance against small probabilities of large losses. Further, any person with income greater than F will never engage in any fair bet. But wealthy people do gamble. Is it solely the love of risk taking? To overcome these objections, Markowitz postulates that utility is related to *changes* in the level of income and that "the utility function has three inflection points. The middle one is at the person's "customary" income level, which except in cases of recent windfall gains and losses is the present income. The income interval between the inflection points is a nondecreasing function of income. The curve is monotonically increasing but bounded; it is at first concave, then convex, then concave, and finally convex.

Markowitz's hypothesis is consistent with the existence of both "fair" (or slightly "unfair") insurance and lotteries. The same individual will both insure and gamble. The hypothesis implies the same behavior whether one is poor or rich.

Markowitz recognizes that until an unambiguous procedure is discovered for determining when and to what extent current income deviates from customary income, the hypothesis will remain essentially nonverifiable because it is not capable of denying any observed behavior. The Markowitz hypothesis reveals perhaps more forcefully than the Friedman-Savage hypothesis, that utility has no meaning as an indicator of a level of utility. Utility has meaning only for changes in situations. Thus while I might choose to receive an increase in income rather than no increase, there is no implication that after I have received it for a while I remain on a higher utility base—however interpreted—than formerly. It may be the getting or losing, the rising or the falling that counts rather than the actual realized position. In any event Markowitz's hypothesis contains no implications about anything other than changes in income.

Our survey is now completed. We started with developments after

[20] H. Markowitz, "The Utility of Wealth," *Jour. Pol. Econ.* (April 1952), LX, 151-58.

the Slutsky, Hicks, Allen utility position in which utility is measured up to monotone transformations only. This meant exactly no more and no less than that utility is ordinal. In other words, the numerical size of the increments in the numbers in any one measure (column of numbers in Table I) is without meaning. Only their signs have significance. Utility translation: marginal utility has meaning only in being positive or negative, but the numerical value is meaningless, *i.e.*, *diminishing* or *increasing* marginal utility is completely arbitrary since one can get either by using the appropriate column.[21]

The first postwar development was the Neumann and Morgenstern axioms which implied measurable utility up to a linear transformation, thus reintroducing diminishing or increasing marginal utility,[22] and which also implied a hypothesis or maxim about rational behavior. This was followed by the Friedman and Savage article and Marschak's paper. These papers are essentially identical in their postulates and propositions although the presentation and exposition are so different that each contributes to an understanding of the other. The Friedman and Savage paper however contains an added element: they attempt to prophesy the shape of the curve of utility of income that would be most commonly revealed by this measurement process. Mosteller and Nogee then made a unique contribution in really trying to verify the validity and applicability of the postulates. Most recently, Markowitz criticized the Friedman and Savage conjecture about the shape of utility of income curve, with his own conjecture about its dependence upon income changes. And that is about where matters stand now.

A moral of our survey is that to say simply that something is, or is not, measurable is to say nothing. The relevant problems are: (1) can numerical values be associated with entities and then be combined according to some rules so as to predict choices in stipulated types of situations, and (2) what are the transformations that can be made upon the initially assigned set of numerical values without losing their predictive powers (validity)? As we have seen, the currently proposed axioms imply measurability up to a linear transformation. Choices among uncertain prospects are predicted by a simple probability-weighted sum of the utilities assigned to the components of the uncertain prospect, specifically from the "expected utility."

And now to provide emotional zest to the reader's intellectual activity the following test is offered. Imagine that today is your birth-

[21] It is a simple task—here left to the reader—to find current textbooks and articles—which will be left unnamed—stating that the indifference curve analysis dispenses with the concept of utility or marginal utility. Actually it dispenses only with *diminishing* or *increasing* marginal utility.

[22] Incidentally, the *Theory of Games* of Neumann and Morgenstern is completely independent of their utility discussion.

day; a friend presents you with a choice among three lotteries. Lottery A consists of a barrel of 2000 tickets of which 2 are marked $1000 and the rest are blanks. Lottery B consists of another barrel of 2000 tickets of which 20 are marked $100 and the rest are blanks. Lottery C consists of a barrel of 2000 tickets of which 1 is marked $1000 and 10 are marked $100. From the chosen barrel one ticket will be drawn at random and you will win the amount printed on the ticket. Which barrel would you choose? Remember there is no cost to you, this is a free gift opportunity. In barrel A the win of $1000 has probability .001 and the probability of getting nothing is .999; in barrel B the probability of winning $100 is .01 and getting nothing has probability .99; in barrel C $1000 has probability .0005, $100 has probability .005 and winning nothing has probability .9945. For each barrel the mathematical expectation is $1.00. The reader is urged to seriously consider and to make a choice. Only after making his choice should he read the footnote.[23]

Conclusion

1. Some readers may be jumping to the conclusion that we really can use *diminishing* or *increasing* marginal utility and that the "indifference curve" or "utility isoquant" technique has been superfluous after all. This is a dangerous conclusion. The "indifference curve" technique is more general in not requiring measurability of utility up to a linear transformation. But its greatest virtue is that unlike the earlier "partial" analysis of demand of a single commodity the indifference curve analysis by using an extra dimension facilitates intercommodity

[23] Only the reader who chose C should continue, for his choice has revealed irrationality or denial of the axioms. This can be shown easily. He states he prefers C to A and to B. First, suppose he is indifferent between A and B; he doesn't care whether his friend chooses to give him A or B just so long as he gets one or the other. Nor does he care how his friend decides which to give. In particular if his friend tosses a coin and gives A if heads come up, otherwise B, he is still indifferent. This being so, a 50-50 chance to get A or B is equivalent to C, as one can see by realizing that C is really equivalent to a .5 probability of getting A and a .5 probability of getting B. Thus if A and B are indifferent there is no reason for choosing C.

Second, the reader choosing C may have preferred A over B. We proceed as follows. Increase the prize in B until our new B, call it B′, is now indifferent with A. Form the uncertain prospect of A and B′ with probability of .5 for A. This is better than C since C is nothing but an uncertain prospect composed of A and the old B, with probability of .5 for A. Where does this leave us? This says that the new uncertain prospect must be preferred to C. But since the new uncertain prospect is composed of .5 probability for A and .5 for B′, the chooser of C must be indifferent between the uncertain prospect and A. (In axiom 3 let A and B be indifferent, and let C be identically the same thing as A. In other words, if the two entities in the uncertain prospect are equally preferred, then the uncertain prospect is indifferent to one of the entities with certainty.) The upshot is that A is just as desired as the new uncertain prospect which is better than C. Thus A is preferred to C, but the chooser of C denied this. Why? Either he understood and accepted the axioms and was irrational in making a snap judgment, or else he really did not accept the axioms. He may now privately choose his own escape. This example is due to Harry Markowitz.

analyses—the heart of price analyses. But does the more "precise" type of measurement give us more than the ordinal measurement gives? Yes. As we have seen, measurability "up to a linear transform" both implies and is implied by the possibility of predicting choices among uncertain prospects, the universal situation.

2. Nothing in the rehabilitation of measurable utility—or choice-indicating numbers—enables us to predict choices among groups of sure prospects. The "utility" of a group of sure prospects is not dependent on *only* the utility (assigned number) of the *entities* in the combination. It is dependent upon the particular *combination of entities; i.e.*, we do not postulate that the utility of one sure element in a group of sure things is independent of what other entities are included. We think it obviously would not lead to valid predictions of actual choices. Therefore, it must be realized that nothing said so far means that we could measure the total utility of a market basket of different entities by merely adding up the utilities of the individual component entities. No method for aggregating the utilities of the component entities for this purpose has been found; therefore, for this purpose we have to say that utility is not measurable.

3. Is the present discussion more appropriate for a journal in psychology or sociology? If economists analyze the behavior of a system of interacting individuals operating in field of action—called the economic sphere—by building up properties of the system from the behavior aspects of the individuals composing the system, then the economists must have some rationale of behavior applicable to the individuals. An alternative approach is to consider the whole system of individuals and detect predictable properties of the system. The classic example of this distinction is in physics. One approach postulates certain laws describing the behavior of individual molecules, or atom particles, while the other starts with laws describing the observable phenomena of masses of molecules. Apparently, most economists have relied upon the former approach, the building up from individuals—sometimes referred to as the aggregation of micro-economic analysis into macro-economic analysis. On the other hand, those who are skeptical of our ability to build from individual behavior find their haven in postulates describing mass behavior. The current utility analyses aid the former approach.

4. The expression "utility" is common in welfare theory. For demand theory and the theory of prediction of choices made by individuals, measurability of the quantity (called "utility") permits us to make verifiable statements about individual behavior, but there is as yet no such happy development in welfare theory. "Measurability up to a linear transformation" does not provide any theorems for welfare theory beyond those derivable from ordinality. I mention this in order to forestall temptations to assume the contrary. The social welfare

function as synthesized by Hicks and Scitovsky, for example, does not require the "utility" (choice-ordering numbers) of each individual to be measurable up to a linear transformation. It is sufficient that the individual's utility be measurable up to a monotone transformation—or, in other words, that it have merely ordinal properties. Ordinal utility is adequate in this case because orderings are made of positions or states in which, as between the two states compared, everyone is better off in one state than in the other. The welfare function does not enable a ranking of two states in one of which some people are worse off.[24] This would require an entirely different kind of measure of utility for each person because of the necessity of making interpersonal aggregations of utilities. As yet no one has proposed a social welfare function acceptable for this purpose, nor has anyone discovered how, even in principle, to measure utility beyond the linear transformation. Even more important, the various elements in the concept of welfare (as distinct from utility) have not been adequately specified. In effect the utility whose measurement is discussed in this paper has literally nothing to do with individual, social or group welfare, whatever the latter may be supposed to mean.

5. A brief obiter dictum on interpersonal utility comparisons may be appropriate. Sometimes it is said that interpersonal utility comparisons are possible since we are constantly declaring that individual A is better off than individual B. For example, "a rich man is better off than a poor man." But is this really an interpersonal utility comparison? Is it not rather a statement by the declarer that he would prefer to be in the rich man's position rather than in the poor man's? It does not say that the rich *man* is happier or has more "utility" than the poor *man*. Even if the rich man has a perpetual smile and declares himself to be truly happy and the poor man admits he is sorrowful, how do we know that the rich *man* is happier than the poor *man*, even though both men prefer being richer to being poorer? If I were able to experience the totality of the poor man's situation and the rich man's, and preferred the rich man's, it would not constitute an interpersonal comparison; rather it would be an *intrapersonal,* intersituation comparison.

It is hoped that the reader now has at his command enough familiarity with the meanings of measurability to be able to interpret and evaluate the blossoming literature on utility and welfare, and that this exposition has made it clear that welfare analysis gains nothing from the current utility analysis, and conversely.

[24] Absolutely nothing is implied about taxation. For example, justification of progressive income taxation by means of utility analysis remains impossible. The best demonstration of this is still E. D. Fagan, "Recent and Contemporary Theories of Progressive Taxation," *Jour. Pol. Econ.* (Aug. 1938), XLVI, 457-98.

DUTY AND NON-DUTY IMPORTS AND INCOME DISTRIBUTION

By ANTHONY Y. C. KOO*

The gains from international trade have long been of theoretical interest to economists. John Stuart Mill, "for the sake of simplicity," restricted his consideration of trade to two countries and two commodities. Alfred Marshall, in an elaboration of Mill's analysis, spoke of *E*'s (England's) and *G*'s (Germany's) goods as mutually exclusive categories of commodities conceptually gathered into "representative bales," the one traded against the other. For the purpose of exposition, Marshall designed the elegant and well-known reciprocal demand curves. Although F. D. Graham extended the analysis beyond the classical two-country-two-commodity case,[1] and thus rendered the two-dimensional Marshallian reciprocal demand curves inapplicable to his more than two-country-two-commodity cases, the Marshallian curves have continued to be used even in the most recent contributions in the field of tariff theory. Tariffs are assumed to be levied on the bales (which means on all types of imports) at a uniform rate, and little attention has as yet been paid to the more common and realistic mixed cases of duty and nonduty imports. This naturally raises the question of whether modifications of the existing theory of the effects of tariffs on income distribution are required if there are simultaneously both duty and nonduty imports.

Since the theory of duty and nonduty imports and income distribution which the writer attempts to present in this paper is a broadening of the results which Stolper and Samuelson[2] reached on the basis of the analysis of Heckscher and Ohlin[3] and which were later synthesized by Metzler,[4] it may be desirable to present a brief summary of the principal

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[1] F. D. Graham, *The Theory of International Values* (Princeton, 1948); "The Theory of International Values Re-examined," *Readings in the Theory of International Trade*, H. S. Ellis and L. A. Metzler, ed. (Philadelphia, 1949), pp. 301–30.

[2] W. F. Stolper and P. A. Samuelson, "Production and Real Wages," *Readings in the Theory of International Trade*, pp. 333–57.

[3] E. F. Heckscher, "The Influence of Foreign Trade on the Distribution of Income," *Readings in the Theory of International Trade*, pp. 272–300; B. Ohlin, *International and Interregional Trade* (Cambridge, Mass., 1933).

[4] L. A. Metzler, "Tariffs, the Terms of Trade and the Distribution of Income," *Jour. Pol. Econ.* (Feb., 1949), LVII, 1–29.

contributions to a subject which has not been developed until comparatively recent times.

I

The classical contribution with respect to the gains from international trade concerns the way in which the gains are divided among countries when each country is considered as a unit. Both the classical theory and its neoclassical refinements neglect to explore how the gains of real income from trade within each country are divided among the various factors of production.[5] The influence of international trade upon the distribution of national income did not receive much attention prior to Heckscher and Ohlin.

Heckscher began his discussion, as did the classical economists, by stating that trade between countries could be explained by the law of comparative costs. Unlike the classical economists, Heckscher emphasized that comparative costs differ between countries because the relative degree of scarcity of some factors of production differs between countries and because different commodities require varying proportions of the factors of production. Let us consider, for example, two countries, *E* and *G*. *E* has a large amount of land per worker as compared with *G*. Since it is to *E*'s advantage to use land to the point where its marginal product is relatively small, the ratio of rent to wage rates will then be lower in *E* than in *G*. Let us consider the comparative costs in *E* and *G* of producing two commodities, say, wheat and textiles. Since wheat requires a larger amount of land per worker than textiles do, *E* will have a comparative advantage in wheat while *G* will have a comparative advantage in textiles. *E* will then export wheat, and *G*, where rents are comparatively high and wages low, will export textiles. The exchange of goods will increase in each country the demand for factors of production in the export industry and reduce demand in those industries competing with imports; but, as Heckscher pointed out, the proportions in which factors of production are required in the export industry are not exactly the same as the proportions in which they are released by the industries competing with imports. In the present example, the shift of resources from textiles (the industry competing with imports) to wheat (the export industry) in *E* creates a relative scarcity of land in *E*, which before trade had a comparatively abundant supply. After trade, rent per unit of land rises in *E* relative to wages per unit of labor. An analogous argument could be presented to show that in *G*,

[5] In the English controversy over the corn laws, the question of income distribution was discussed. But the results of the controversy did not leave any permanent influence on the theory of international trade and, in this respect, were inconclusive. See C. F. Bastable, *The Theory of International Trade* (London, 1903), Ch. 6, as pointed out by Metzler, *ibid.*, p. 2.

which initially had a comparatively large supply of labor in relation to land before trade, there will be an increase of wage rates relative to rents after trade. Since international trade has a tendency to equalize relative and absolute factor returns among different countries, the owners of the relatively scarce factors of production would be interested in reducing the volume of trade to the extent that their losses as producers outweigh their gains from cheap imports, so that they can keep the relative scarcity which might otherwise be reduced by competition from abroad through trade.[6]

The clarification of this point constitutes the contribution of Stolper and Samuelson.[7] They showed that a country's scarce factor can be benefited by tariffs even though the national income may thereby be diminished. Their conclusion, however, was based on two main assumptions. The first is that there is only one import product, or that all import goods are measured in one common unit, and therefore a tariff could only cause factors of production to be shifted from the export industry to the industry competing with imports; and, according to the analysis of Heckscher and Ohlin, the export industry will be that which requires a comparatively small amount of the relatively scarce factor, and the industry competing with imports will be that which requires a large proportion of the scarce factor compared to other factors. The shift of resources brought about by the tariff leads to a net increment of demand over supply for the scarce factor and an excess supply of the other relatively abundant factors. Accordingly, the abundant factors can be absorbed only if the ratio of the scarce factor to the abundant factor is reduced. For this to occur, the marginal product of the scarce factor must increase in all industries.

The second assumption is that a country's external terms of trade are unaffected by the tariff. The tariff, in their argument, interferes with the allocation of resources without any offsetting favorable movement in the terms of trade.

The drawback of the Stolper-Samuelson paper, in making no allowances for changes in the terms of trade, was first pointed out by Metzler. "It is a curious fact that, just as the classical discussion of the terms of trade had neglected or left unsolved the related problem of the distribution of income, so the more recent contributions to the study of

[6] For a discussion whether international trade would achieve a complete or only a partial equalization of the relative and absolute factor returns in different countries, see P. A. Samuelson, "International Trade and Equalization of Factor Prices," *Econ. Jour.*, June 1948, LVIII, 163–86; "International Factor-price Equalization Once Again," *ibid.*, June 1949, LIX, 181–97. S. F. James and I. F. Pierce "The Factor Price Equalization Myth," *Rev. Econ. Stud.*, 1951–52, XIX (2), 111–20; P. A. Samuelson, "A Comment on Factor Price Equalization," *ibid.*, pp. 121–22.

[7] *Op. cit.*, pp. 333–57.

income distribution have neglected the complications arising out of changes in the terms of trade."[8] In view of this, Metzler synthesized the two branches of the subject and presented a refined version of the theory of tariff and income distribution. While he did away with the second restrictive assumption of Stolper and Samuelson, that of allowing for no change in the terms of trade, he still left untouched the first assumption of only one import product, because he carried out his argument by means of Marshallian reciprocal demand schedules. In a footnote, however, he mentioned that in adopting this method he had not added anything essentially new to the well-known classical technique. His purpose rather was to apply this technique to a problem which was seldom discussed and never strongly emphasized in classical literature.[9] Therefore Metzler's revised version of the theory still failed to take into account the more general case where there are duty and nonduty imports, although he suggested that a re-examination of his conclusions should be made for the case in which there are nonduty as well as duty imports.[10]

Metzler assumes that there are two countries, E and G. Country E exporbs b in exchange for a_{1g} from country G.[11] In Figure 1, the curves e and g represent the reciprocal demand schedules of the two countries, respectively, under conditions of free trade. Equilibrium is established at the point P, which implies that E imports an amount OT of a_{1g} in exchange for OW of b. Suppose country E imposes an *ad valorem* duty of 50 per cent upon imported a_{1g}. Let us neglect for the time being the effects of the spending of the proceeds of the tariff by the government of E. The tariff reduces the demand schedule facing the exporters of a_{1g} in G from e to e'. In other words, a_{1g} importers in E will now be willing to give to the exporters in G only TS units of b for OT units of a_{1g}. A money value of SP which citizens of E formerly gave to G would now go to the E government as duty. After the tariff, the new equilibrium in terms of quantities is at P', at which point OW' units of b are exported by E and OT' units of a_{1g} are imported. In Figure 1 the tariff improves the terms of trade of E. The fraction OT'/OW' is larger than OT/OW. This means that the world price of a_{1g}, exclusive of the tariff, has fallen relative to the world price of b. Such an improvement of the terms of trade is well known through the contributions of the classical theorists. In order to show how the tariff has affected the distribution of income in E, Metzler pointed out that the tariff must be added to

[8] *Op. cit.*, p. 2.

[9] *Op. cit.*, pp. 6–7.

[10] *Op. cit.*, pp. 21–22.

[11] I have changed the lettering of the Metzler diagrams as well as the names of commodities used in the illustration so that they will conform with the usage in Section II below.

the world price of a_{1g} measured in terms of E's export commodity. The total outlay of the residents of E for imported a_{1g} including their outlay for the tariff is now OW' in Figure 1 but OW'', an amount 50 per cent greater than OW'. The domestic ratio of exchange is, therefore, OT'/OW''. Since OT'/OW'' is less than OT/OW in Figure 1, the tariff has caused the domestic price of a_{1g} to rise relative to the price of b. The factors of production are therefore shifted to the domestic indus-

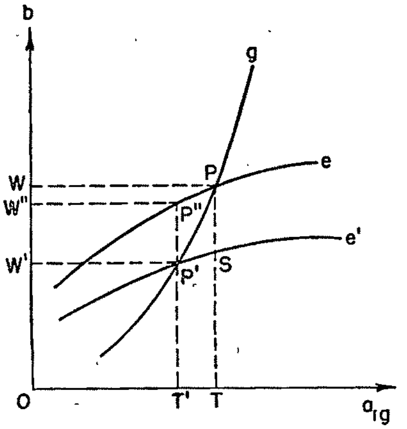

FIG. 1

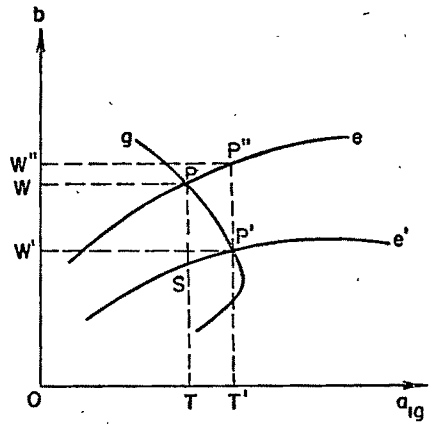

FIG. 2

try a_{1e} (competing with a_{1g}) from b (the export industry). Metzler then generalizes as follows:

> If the world demand for a country's exports is elastic and if we neglect the effects of government expenditures on the demand for imports, (1) a tariff always increases the domestic prices of imports relative to the prices of exports; (2) the improvement in the terms of trade is not sufficient, in this case, to offset the tariff itself; (3) the protected industries become more profitable, relative to the export industries; (4) resources are shifted from the latter to the former; and (5) the real returns to the country's scarce factors of production, as well as these factors' share in the national income, are increased. The Stolper-Samuelson conclusion is thus valid, even when changes in the terms of trade are taken into account, as long as the demand for exports is elastic.[12]

Then Metzler proceeds to the case in which the demand for exports is inelastic. In Figure 2, the demand of G for the products of E is assumed to be inelastic at the equilibrium point P. After the tariff is imposed, the point of balance of trade moves to P' at which point E gives up OW' units of b in exchange for OT' units of a_{1g}. As in the first case, the terms of trade move in favor of E. In fact, the favorable movement

[12] *Op. cit.*, p. 9.

in the terms of trade of E is now such that the domestic price of a_{1g}, including the tariff, is lower relative to the price of b than it was before the tariff was imposed, as is shown in Figure 2 by the fact that OT'/OW'' is greater than OT/OW. Thus when the demand for a country's exports is inelastic, a tariff on a_{1g} reduces the domestic price of a_{1g} relative to the price of b and leads to a shift of resources in E from a_{1e} (the domestic industry competing with a_{1g}) to b (the export industry). The scarce factors of production and the industries competing with imports under this condition actually achieve economic gains from free trade and suf-

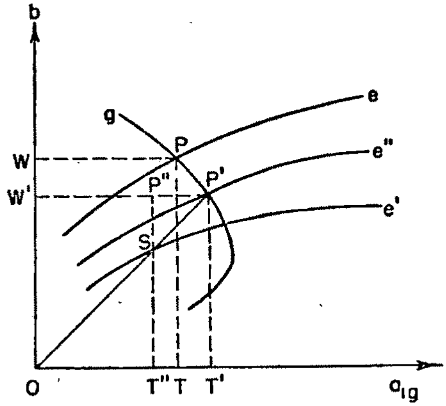

FIG. 3

fer losses under protection. Therefore in this case the Stolper-Samuelson conclusions are invalid.

Next, Metzler makes it clear that the way in which a government imposing the import duty disposes of the resultant revenue would affect the income distribution. In Figures 1 and 2, it is assumed that no part of the tariff proceeds is spent on imported goods. If it were, the reciprocal demand would not fall by the full amount of the tariff as shown in the figures. So Metzler next assumes an extreme case in which customs revenues are used entirely in the purchase of imports. This case is represented by Figure 3. As in the earlier diagrams, equilibrium is initially at P. A tariff is imposed upon a_{1g} imports into E, but the entire proceeds are now assumed to be spent upon a_{1g}. The additional demand of the government for imports prevents the demand schedule of E for the products of G from falling as far as it otherwise would have fallen. In Figure 3, the new demand schedule, including the government's demand for imports, is shown by line e''. The private demand schedule not including the government's demand is line e'.[13] As in the earlier

[13] For a discussion of the relations between the three demand schedules, e, e', and e'' and the procedure by which e'' is to be derived from e and e', see Metzler, *op. cit.*, pp. 11–12.

examples, the tariff improves the terms of trade of country E, which means that the price of E's imports, exclusive of the tariff, declines relative to that country's exports. OT/OW is greater than OT'/OW'. These terms of trade are, however, measured in world prices, and, as before, it is the domestic price ratio rather than the world price ratio which governs the distribution of income in the duty-imposing country. As far as the residents of E are concerned, the domestic ratio of exchange is given by the point P''. They would purchase OT'' units of a_{1g} for which they would pay $T''S$ units of b to country G, and an additional SP'' units of b to their government. Since P'' lies to the left of P, it represents a higher domestic price of a_{1g}, including the tariff, relative to the price of b, than does the point P. The amount of duty SP'', in the present example, is assumed to be spent entirely on a_{1g} at the world ratio of exchange between b and a_{1g}, exclusive of the tariff. The ratio, for purposes of illustration, was assumed by Metzler to be represented by the slope of the line OSP' (Fig. 3). E's government would get $P''P'$ amount of a_{1g} and pay SP'' in terms of b.

Consequently, when the proceeds of the tariff are spent entirely on imports, as shown in Figure 3, the direct influence of the tariff toward raising the price of a_{1g} in E is more important than the indirect influence toward improving that country's terms of trade. The net effect is an increase of the domestic price of a_{1g}, including the duty, relative to b, even though the foreign demand for the exports of the duty-imposing country is inelastic. The tariff, accordingly, leads to a shift of resources from the export industry b to a_{1e} (the domestic industry competing with a_{1g}). Therefore when customs duties are used entirely in the purchase of imports, no modifications are required in the Stopler-Samuelson conclusion. And this would be true regardless of the size of the elasticity of demand for the duty-imposing country's exports.

In the foregoing discussion Metzler considers two extreme cases in which: (1) the demand for E's exports is inelastic and the proceeds of the tariff are spent *entirely* on the export good, with the result that the domestic price including the tariff would go down; and (2) the demand for E's exports is inelastic and the proceeds of the tariff are spent *entirely* for imports, with the result that the domestic price of a_{1g}, including the tariff, would go up. Between these extremes Metzler finds an intermediate case in which the proceeds are assumed to be divided between the purchase of imports and exports respectively. In such case the domestic price of a_{1g}, including the tariff, might remain the same as the world price.[14] In other words, the relative prices actually paid and re-

[14] For an exact statement of the conditions under which the forces affecting domestic prices will cancel each other, see L. A. Metzler, "Tariffs, International Demand and Domestic Prices," *Jour. Pol. Econ.* (Aug. 1949), LVII, 345–51.

ceived by consumers and producers of the two goods b and a_{1e} (competing with a_{1g}) may be unaltered by the tariff. No shift in resources between the two industries would take place and the distribution of income would be the same as before the tariff was imposed. Metzler's result depends upon the balance between two forces working in opposite directions. On the one hand, the tariff would cause a direct increase in the prices of imports, relative to the prices of exports. On the other hand, the tariff reduces the demand for imports, and, unless the country imposing the duties is small, this reduction in demand is likely to reduce the world prices of such imports relative to the prices of the country's exports. If the first of the opposing influences dominates, the domestic prices of imports, including the tariff, will go up relative to the prices of exports. If the second of the opposing influences dominates, the domestic prices of imports, including the tariff, will go down relative to the prices of exports. If one just counterbalances the other, the domestic prices of imports, including the tariff, will remain unchanged. Whether one or the other of these opposing forces will dominate depends upon conditions of foreign demand for the duty-imposing country's exports, and upon the way in which the tariffs affect the demand for imports.

> If the world's demand for exports of the tariff-imposing country is elastic or if the tariffs do not reduce the demand for imports at home to any substantial degree, the movement of world prices is likely to be negligible. The final effect will therefore be an increase in the domestic prices of imports, including the tariffs, relative to the prices of the country's exports. But if the world demand for the tariff-imposing country's exports is inelastic and if the tariffs reduce the demand for imports in the tariff-imposing country to a considerable extent, the fall in world prices of imports, relative to world prices of exports, may be so large that domestic prices of imports are relatively lower than before the tariffs were imposed, even after the tariffs are added to the world prices.[15]

By way of summary, let us tabulate the effects of tariffs on income distribution, after taking into account the changes in the terms of trade as done by Metzler; then we shall examine the validity of the Stolper-Samuelson results as modified by Metzler, with duty as well as nonduty imports.

II

In order to show the effects of duty and nonduty imports on income distribution, let us assume three commodities, a_1, a_2, and b.

	Domestic Commodities			*Export Commodities*	
Country E...........	a_{1e}		a_{2e}		b
Country G...........		b		a_{1g}	a_{2g}

[15] *Ibid.*, p. 345.

TABLE I.—METZLER'S RESULTS

	Case	A. World demand for E's (the duty-imposing country) exports is elastic	B. World demand for E's (the duty-imposing country) exports is inelastic
1.	Proceeds of duty used entirely to purchase E's export commodities	X	Y
2.	Proceeds of duty used entirely to purchase E's imports	X	X
3.	Proceeds of duty divided between E's exports and imports	X	Indeterminate; X, Y, Z, cases are all possible

X. The domestic prices of imports, including the tariff, will go up in E (the duty-imposing country). The Stolper-Samuelson results are valid, namely that the scarce factor of the country can benefit by means of tariffs.

Y. The domestic prices of imports, including the tariff, will go down in E. The Stopler-Samuelsön results become invalid.

Z. The domestic prices of imports, including the tariff, will remain unchanged in E. The Stolper-Samuelson results become invalid.

Assume that the export industry b in E requires a large amount of the relatively abundant factors and the domestic industries are those which require a small proportion of the abundant factors compared to other factors. Within the domestic industries a_{1e} and a_{2e} in E, the respective requirements for the abundant and the scarce factors may differ. For instance, a_{1e} may require a comparatively smaller amount of abundant factors in relation to scarce factors than a_{2e}, or *vice versa*. If labor (L) be the scarce factor and capital (C) the abundant factor, we have the following possible ratios between labor and capital in the domestic industries in E:[16]

$$\left(\frac{L_1}{C_1}\right)_{a_{1e}} \gtreqless \left(\frac{L_1}{C_2}\right)_{a_{2e}} > \left(\frac{L_b}{C_b}\right)_b.$$

[16] The relationship between total labor and total capital to L_1/C_1, L_2/C_2 and L_3/C_3 is as follows:

Since total capital $C = C_1+C_2+C_3$
and total labor $L=L_1+L_2+L_3$

$$\text{it follows that } \frac{\text{total labor}}{\text{total capital}} = W_1\frac{L_1}{C_1}+W_2\frac{L_2}{C_2}+W_3\frac{L_3}{C_3}$$

$$W_1=\frac{C_1}{C};\ W_2=\frac{C_2}{C};\ W_3=\frac{C_3}{C} \qquad W_1=1-(W_2+W_3)$$

See P. A. Samuelson, "International Trade and Equalization of Factor Prices," *loc. cit.*, p. 174, and Stolper and Samuelson, *op. cit.*, pp. 349–51.

Pure competition in the factor and product markets, a constant (inelastic) supply of factors of production, and perfect domestic mobility of factors of production are assumed throughout. In each country there exist demand functions for each of the commodities. Equilibrium requires that price ratios be such as to equate the demand and supply of the two countries taken together for each commodity.

Let us draw in Figure 4 country E's production opportunity surface

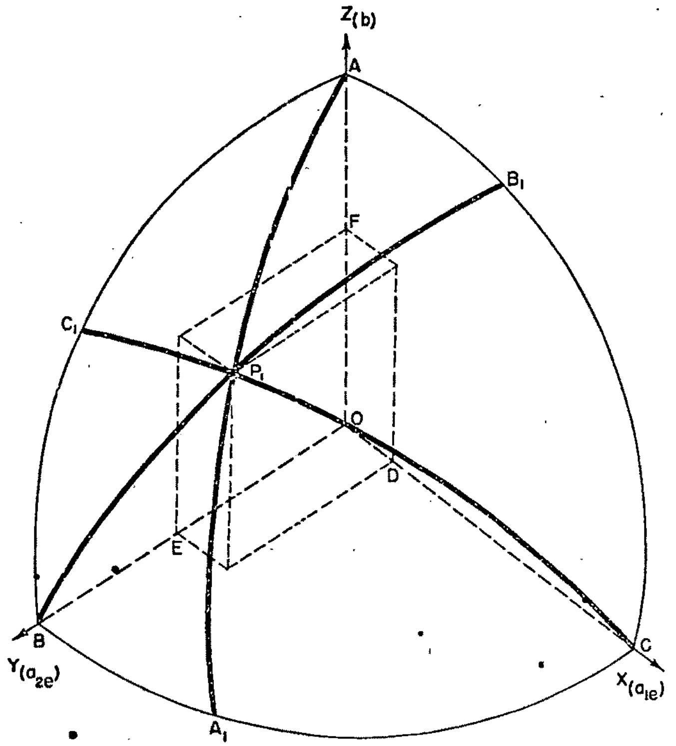

FIG. 4

of commodities a_{1e}, a_{2e} and b ($[f(a_{1e}, a_{2e}, b] = 0$ in the first quadrant) which represents the maximum combinations of a_{1e}, a_{2e}, and b that can be produced. Quantities of a_{1e} are measured along the X-axis, quantities of a_{2e} along the Y-axis and quantities of b up the Z-axis so that any point in the space among the three axes represents a certain combination of a_{1e}, a_{2e}, and b. In the two-commodity case, the production opportunity surface becomes the familiar production opportunity curve. If the entire available supply of factors of production is employed in producing a_{1e}, it can produce OC. If employed entirely to produce a_{2e}, it can produce the quantity OB, and if employed entirely in producing b, it can produce the quantity OA. For every unit of a_{1e} by which production is

reduced, more a_{2e} and/or b can be produced. Thus, all the possible combinations of a_{1e}, a_{2e}, and b which can be produced by utilizing all the available factors of production lie upon the surface. The surface is drawn concave towards the origin, signifying increasing opportunity cost. Because proportions and not the scale of the process are involved, the production functions are assumed to be homogenous of the first order. Since the relative costs—the substitution ratios—will vary with the relative demand for a_{1e}, a_{2e}, and b, given the combinations of a_{1e}, a_{2e}, and b which are demanded, the exchange ratios between them will equal their substitution ratios at the equilibrium point.[17] In diagrammatic language, the above statement means that at the point of equilibrium the market plane must be tangent to the production opportunity surface. (The market plane is not shown in Figure 4.) The change or lack of change of relative output and, accordingly, relative prices, between any pair of the commodities, is shown by the surface lines through the vertices of the production opportunity surface. For example, the line AA_1 represents the constant relative output between a_{1e} and a_{2e}. Similarly, the surface line BB_1 indicates the constant relative output between a_{1e} and b. Inasmuch as any change of relative outputs among the three commodities would be in accordance with the changes of relative prices, henceforth we shall simply indicate the change of relative prices of the three commodities by referring to the appropriate changes in the line on the production surface.

III

Let us assume that country E exports b in exchange for a_{1g} and a_{2g}, and equilibrium is established under the conditions of free trade at P_1 on the production opportunity surface in Figure 4. Let us project P_1 onto the planes AOB, AOC, and BOC, respectively. Output would be OD of a_{1e}, OE of a_{2e}, and OF of b before the imposition of duty on a_{1g} by country E. Suppose that country E imposes an *ad valorem* duty on imports of a_{1g} class commodities and no duty is levied on a_{2g} class commodities. Let us assume that country G, the exporter of a_{1g}, does not choose to retaliate.[18] It is clear that the effect of the tariff is a reduction of the demand schedule facing the producers of a_{1g} class commodities in G, because a part of the money value which residents of E formerly gave to G now goes to the E government as duty.

What is the effect of the duty on the domestic price of a_{1g} in the duty-

[17] The assumptions under which the exchange and transformation ratios will be identical are competition, indifference of factors with respect to the industry in which they are employed, and absence of external economies and diseconomies. See G. Haberler, "Some Problems in the Pure Theory of International Trade," *Econ. Jour.* (June, 1950), LX, 225.

[18] Tibor de Scitovszky, "A Reconsideration of the Theory of Tariffs," *Readings in the Theory of International Trade*, pp. 358–89.

imposing country *E*? It is known that the world price of a_{1g}, exclusive of the tariff, will fall in terms of b unless E is a very small buyer of a_{1g}. But in terms of domestic prices, the tariff must be added to the world price of a_{1g}, and this would cause the domestic price of a_{1g} in E to rise relative to b. This statement is valid whether the proceeds of the duty are used entirely to purchase *E*'s exports (Metzler's case 1A in Table I), or used to purchase *E*'s imports (Case 2A), or are divided between

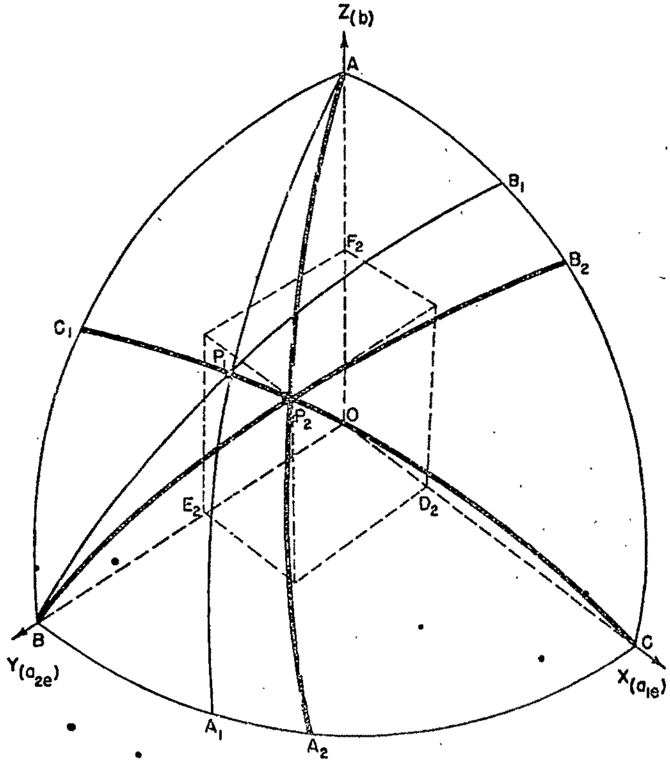

FIG. 5

E's exports and imports (Case 3A). Therefore, in the two-commodity case, as Stolper-Samuelson and Metzler all agree, the factors of production are to be shifted from b, the export industry, to a_{1e}, the domestic industry in E. Since $(L_1/C_1)_{a_{1e}} > (L_b/C_b)_b$ in the present illustration, the scarce factor of production, namely, labor, will benefit. But in three-commodity cases, a change of relative price between a_{1e} and b, as shown in Figure 5, also means a change of relative price between a_{2e} relative to a_{1e} and/or b.[19] This is the familiar proposition that the structure of

[19] For a mathematical demonstration of this point, see the appendix.

our economic system determines the relative prices of all commodities. In this particular case, the prices of commodities a_{1e} and a_{2e} are expressed in terms of b.

Before determining whether a tariff on a_{1g} class of imports and none on others would affect income distribution, we have to know not only the relative pride change between duty imports, including the tariff, and exports but also the relative price change between nonduty imports and exports.[20] Since the price of the duty imports, including the tariff, is bound to go up relative to b with the elastic foreign demand for E's exports (Metzler's Cases 1A, 2A and 3A), the three possible cases of price movements of nonduty imports will be examined.

CASE 1. *The price of nonduty imports remains unchanged.* In Figure 5, the increase in the domestic price of a_{1g} (and accordingly the price of a_{1e} competing with a_{1g}) in E, including the tariff, relative to b is represented by the shift of the surface line from BB_1 to BB_2. Since there are three commodities, the change of relative price between a_{1e} and b automatically means a change of the relative price between a_{1e} and a_{2e}. This is represented by the shift of the surface line from AA_1 to AA_2. The surface line CC_1 remains unchanged. The new equilibrium position accordingly moves from P_1 to P_2 in Figure 5 where the market plane is again tangent to the production surface[21] (not shown in the figure). Projecting P_2 onto the three planes respectively, output would be OD_2 of a_{1e}, OE_2 of a_{2e} and OF_2 of b. Since $OD_2 > OD$, $OE_2 < OE$, and $OF_2 < OF$, the expansion of the protected industry is at the expense of both a_{2e} (the domestic industry) and b (the export industry). This proves that Stolper-Samuelson and Metzler conclusions, though interesting, are valid only under the two-commodity case where the price of a_{1e} (competing with a_{1g}) can increase only relative to b (the exports of E). Therefore, the expansion of the protected domestic industry requiring a large proportion of scarce factors compared to other factors can only be at the expense of the export industry requiring a comparatively small amount of scarce factors in relation to other factors. Once the expansion of the protected industry can draw in the factors of production released by export and domestic industries, the effect of the tariff on income distribution within the duty-imposing country depends upon the ratio between the scarce and the abundant factors required in the respective domestic industries. If the protected industry a_{1e} makes greater or equal relative use of the scarce factor than the domestic industry a_{2e} competing with nonduty imports, or, $(L_1/C_1)_{a_{1e}} \geqq (L_2/C_2)_{a_{2e}}$, then for every unit

[20] Since there is no duty on a_{2g}, its domestic price in E is assumed to be identical to the world price.

[21] The change of price ratio between a_{1e} and b as well as between a_{1e} and a_{2e} can be expressed by the slopes of the tangent planes at $P_1[(\partial a_1/\partial a_2)_{P_1}$ and $(\partial a_1/\partial b)_{P_1}]$ which are different from the slopes of the tangent plane at $P_2[(\partial a_1/\partial a_2)_{P_2}$ and $(\partial a_1/\partial b)_{P_2}]$.

of labor (L), the scarce factor, transferred from the export industry and the domestic industry competing with nonduty imports to the protected industry, a larger amount of capital (C), the abundant factor, will be released than the protected industry will absorb. Hence labor (L) becomes scarcer. Only then can one claim that a tariff on a_{1e} will benefit the scarce factor. Uncertainty about the outcome arises if the protected industry a_{1e} is the one which makes relatively less use of labor (L) than the domestic industry a_{2e} competing with nonduty imports, or,

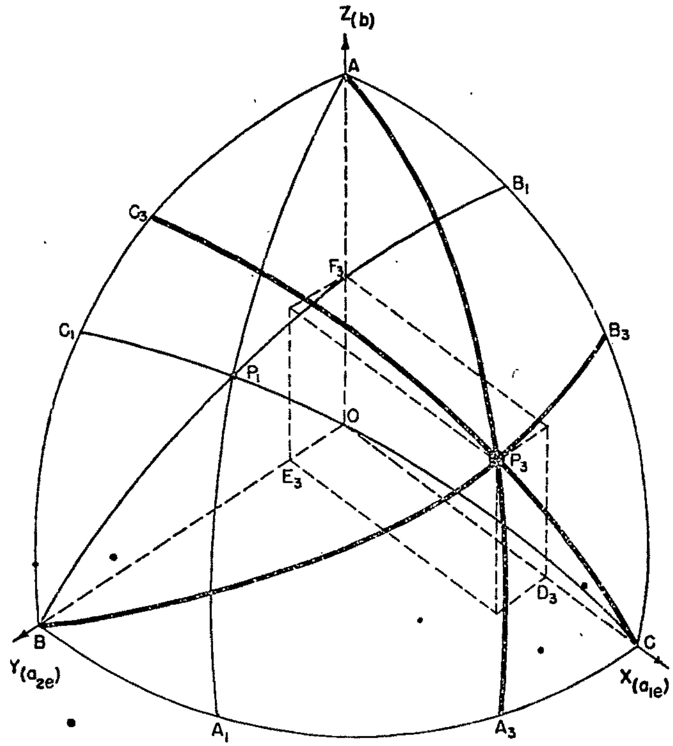

FIG. 6

$(L_1/C_1)_{a_{1e}} < (L_2/C_2)_{a_{2e}}$. In so far as factors are released by the export industry, labor (L) becomes scarcer as $(L_1/C_1)_{a_{1e}}$ or $(L_2/C_2)_{a_{2e}}$ is always greater than $(L_b/C_b)_b$; but in so far as factors are drawn from a_{2e} with $(L_1/C_1)_{a_{1e}} < (L_2/C_2)_{a_{2e}}$, ($L$) becomes less scarce. The net result is thus uncertain.

CASE 2. *The price of nonduty imports goes down.* Next we shall examine the case where the domestic price of a_{1g} (and, accordingly, the price of a_{1e} competing with a_{1g}) goes up relative to b while the price of a_{2g} (and accordingly the price of a_{2e} competing with a_{2g}) goes down relative to b. In Figure 6, the former price shift is shown by the movement of the sur-

face line from BB_1 to BB_3, the latter by the change of CC_1 to CC_3. Since the prices of a_{1e} and a_{2e} move in opposite directions with respect to b, the relative price between a_{1e} and a_{2e} must also move as represented by the shift of the surface line AA_1 to AA_3. This means the domestic price of a_{1g} (and, accordingly, the price of a_{1e} competing with a_{1g}), including the tariff, will be higher relative to b which in turn will be higher relative to a_{2e}. Or, in other words, the domestic price of a_{1g}, including the tariff, will be higher relative to both b and a_{2e}. The equilibrium point as a result of such price changes moves from P_1, the initial point of equilibrium under free trade, to P_3. Project P_3 onto the planes AOB, AOC, and BOC respectively, output would be OD_3 of a_{1e}, OE_3 of a_{2e}, and OF_3 of b. Since $OD_3 > OD$, $OE_3 < OE$, and $OF_3 < OF$, the expansion of a_{1e} will be at the expense of both a_{2e}, the domestic industry, and b, the export industry, and no generalization can be drawn under the circumstances concerning the effect of the tariff on income distribution, if $(L_1/C_1)_{a_{1e}} < (L_2/C_2)_{a_{2e}}$. If, on the other hand, the protected industry a_{1e} makes greater or equal relative use of the scarce factor than the domestic industry a_{2e}, competing with nonduty imports, or, $(L_1/C_1)_{a_{1e}} \geqq (L_2/C_2)_{a_{2e}}$, then a tariff on a_{1e} will benefit labor (L), the scarce factor.

CASE 3. *The price of nonduty imports goes up.* The last possible case is one in which the prices of both a_{1g}, including the tariff, and a_{2g} increase relative to b. In order to examine the effect of a tariff on income distribution in this case, see Figure 7. The former price increase is represented by the shift of the surface line from BB_1 to BB_4, and the latter price increase by the shift of the surface line from CC_1 to CC_4. The new point of equilibrium moves from P_1 to P_4. Project P_4 onto the planes AOB, AOC, and BOC respectively. Output would be OD_4 of a_{1e}, OE_4 of a_{2e}, and OF_4 of b. Since $OD_4 > OD$, $OE_4 > OE$, and $OF_4 < OF$, the expansion of both a_{1e} and a_{2e} (both domestic industries) would be at the expense of b (the export industry) *alone*. In such a case our conclusion agrees with the one reached by Stolper-Samuelson and Metzler irrespective of the fact that $(C_1/L_1)_{a_{1e}} \gtreqless (C_1/L_1)_{a_{2e}}$.

Let us summarize our conclusions in this section. When the foreign demand for the duty-imposing country E's exports is elastic, the domestic price of the duty import goes up. The effect of a tariff on income distribution would then depend upon what happens to the price of a_{2g}, and whether or not the relative use of the scarce factor by the protected industry a_{1e} is more or less than, or equal to, that in the domestic industry a_{2e} competing with nonduty imports. If the price of a_{2g} remains unchanged or decreases relative to b, and if the protected industry a_{1e} makes greater or equal relative use of the scarce factor than the domestic industry a_{2e} competing with nonduty imports, or, $(L_1/C_1)_{a_{1e}} \geqq (L_2/C_2)_{a_{2e}}$, then a tariff on a_{1e} will benefit the scarce factor. This is

trade. Suppose that an *ad valorem* duty is imposed on imports of class a_{1g} commodities and no duty on a_{2g} class commodities. As before, the terms of trade between a_{1g} and b move in favor of E. In fact, the favorable movement in the terms of trade may now be so great that the domestic price of a_{1g}, including the tariff, will be lower relative to b than it was before the tariff was imposed, if the proceeds of the duty are used entirely to purchase E's exports (Metzler's Case 1B). The domestic

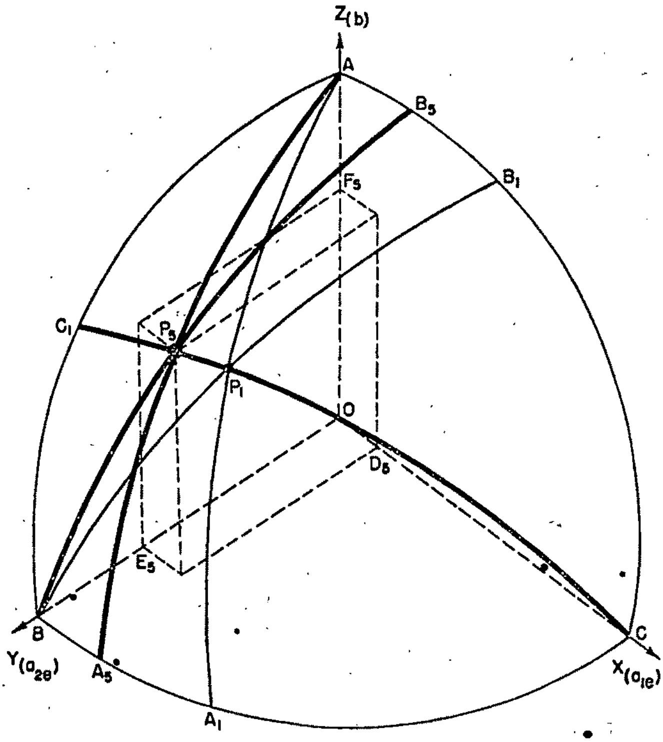

FIG. 8

price of duty imports a_{1g}, including the tariff, may, however, go up if the proceeds of the duty are used entirely to purchase E's imports (Case 2B); and finally, it may remain unchanged if the proceeds are divided in a certain way between E's exports and imports (Case 3Z). Since the effect upon income distribution cannot be determined without knowing also the direction of the price change in nonduty imports in E, and since the price of nonduty imports may go up, down or remain unchanged, there are three cases corresponding to the three possible price movements of duty imports.

CASE 4. *Price of duty imports goes down while the price of nonduty im-*

ports remains unchanged. In Figure 8, before the imposition of tariff, the initial position of equilibrium is P_1. A decrease of price of a_{1g} (and accordingly the price of a_{1e} competing with a_{1g}) including the tariff, relative to b means a shifting of the surface line BB_1 to BB_5. Assume that there is no change of relative price between a_{2e} and b. Since all three commodities are expressed in terms of relative prices, a change of the price between a_{1e} and b with no change of price between a_{2e} and b must mean a change of the relative price between a_{1e} and a_{2e}. This is represented by the shifting of the line AA_1 to AA_5 in Figure 8. Consequently, the relative outputs of all three commodities are affected. The new point of equilibrium is now P_5. Project P_5 onto the planes AOB, AOC, and BOC respectively. The output of a_{1e} is OD_5, of a_{2e}, OE_5, of b, OF_5. Since $OD_5<OD$, $OE_5>OE$, and $OF_5>OF$, the factors released by a_{1e} are absorbed by both domestic and export industries and the effect of a tariff on income distribution depends upon the ratio between the scarce and the abundant factors required in the respective domestic industries. If $(L_1/C_1)_{a_{1e}} \geqq (L_2/C_2)_{a_{2e}}$: then for every unit of capital (C), the abundant factor, transferred, a larger number of units of labor (L), the scarce factor, will be released than the domestic industry competing with nonduty imports and the export industry will absorb. Hence L becomes less scarce. The effect of a tariff will thus be unfavorable to the scarce factor. However, uncertainty about the outcome arises if $(L_1/C_1)_{a_{1e}}<(L_2/C_2)_{a_{2e}}$. In so far as factors are absorbed by the export industry, L becomes less scarce, but in so far as factors are absorbed by a_{2e} with $(L_1/C_1)_{a_{1e}}<(L_2/C_2)_{a_{2e}}$, L becomes scarcer. The net result is uncertain.

CASE 5. *Price of duty imports goes down while the price of nonduty imports goes up.* Next we shall consider the case where the domestic price of a_{1g}, including the tariff, (and accordingly the price of a_{1e} competing with a_{1g}), goes down relative to b, and the price of a_{2g} goes up relative to b. In Figure 9, the former price change is represented by the shift of the surface line from BB_1 to BB_6 and the latter change by the shift of line CC_1 to CC_6. Since the prices of a_{1e} and a_{2e} move in opposite directions with respect to b, the relative price between a_{1e} and a_{2e} must also move as represented by the shift of the surface line AA_1 to AA_6. Or, in other words, the domestic price of a_{1g}, including the tariff, is lower relative to both a_{2e} and b. As a result of the relative price changes, the point of equilibrium moves from P_1 to P_6. Project P_6 onto the planes AOB, AOC and BOC, respectively. The output of a_{1e} is OD_6, of a_{2e}, OE_6, and of b, OF_6. Since $OD_6<OD$, $OE_6>OE$, and $OF_6<OF$, the expansion of a_{2e} would be at the expense of both a_{1e}, the domestic industry, and b, the export industry. Again, the *a priori* conclusion concerning the effect of the tariff on income distribution de-

pends upon whether the relative use of the scarce factor by the protected industry a_{1e} is more or less than, or equal to, that by the domestic industry a_{2e} competing with nonduty imports. If $(L_1/C_1)_{a_{1e}} > (L_2/C_2)_{a_{2e}}$ the outcome is uncertain. If, on the other hand, $(L_1/C_1)_{a_{1e}} \leqq (L_2/C_2)_{a_{2e}}$ the effect of a tariff on income distribution would be favorable to the scarce factor.

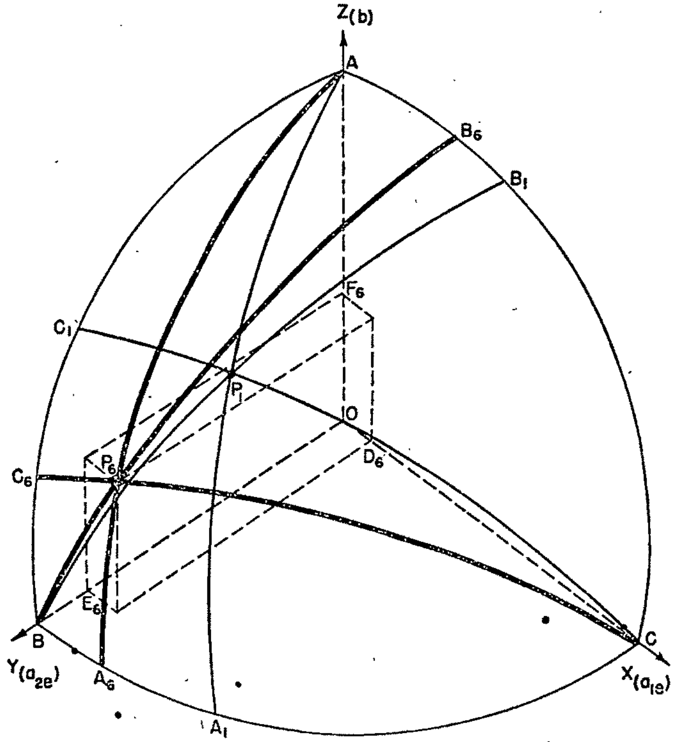

FIG. 9

CASE 6. *Price of nonduty import goes down while the price of duty imports also goes down.* This case concerns a decrease of the domestic price of a_{1g} (and accordingly the price of a_{1e} competing with a_{1g}), including the tariff, in E relative to b coupled with a decrease of the price of a_{2g} (and accordingly the price of a_{2e} competing with a_{2g}) also relative to b. The former price change is represented by the shift of the surface line from BB_1 to BB_7 in Figure 10 and the latter, by the shift of CC to CC_7. Consequently, the point of equilibrium moves from P_1 to P_7 Project P_7 onto the planes AOB, AOC and BOC, respectively. OD_7 of a_{1e}, OE_7 of a_{2e} and OF_7 of b are produced. Since $OD_7 < OD$, $OE_7 < OE$ and $OF_7 > OF$, the expansion of b, the export industry, in E is at the expense of a_{1e} and a_{2e}, both domestic industries. Thus Metzler's result

that when the demand for the duty-imposing country's exports is inelastic, the scarce factors of production and the industries competing with imports might achieve economic gains under free trade and suffer losses under protection (Case 1B) is compatible with our analysis even with the presence of nonduty imports as long as the price of nonduty imports also goes down relative to b. This result is true whether the relative use of the scarce factor by the protected industry a_{1e} is more or

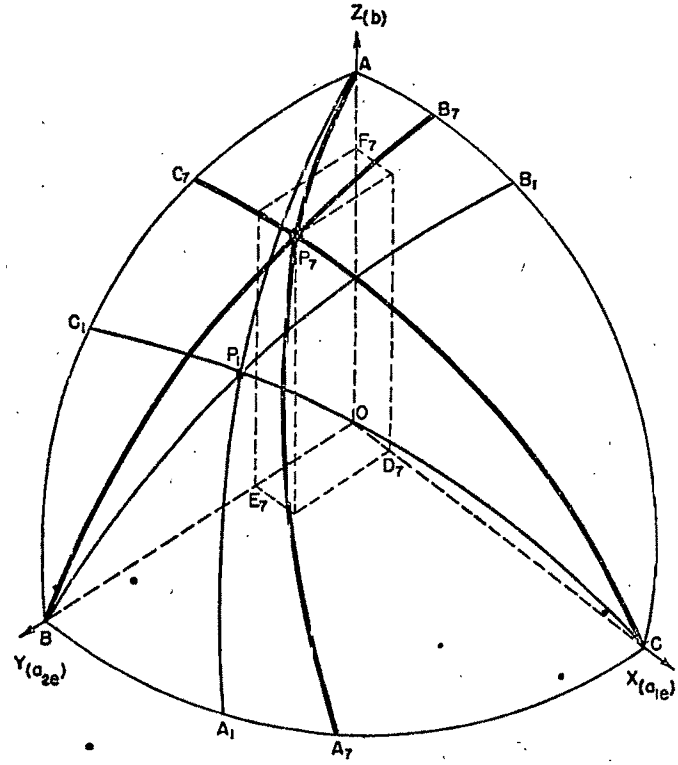

FIG. 10

less than, or equal to, that by the domestic industry a_{2e} competing with nonduty imports.

As regards Metzler's Case 2B, namely, that in which the price of duty imports, including the tariff, may go up when the proceeds of the duty are spent entirely on imports even though the foreign demand for E's exports may be inelastic, there are also three possible cases of price movements of a_{2g} to consider. Inasmuch as their effects are analogous to Cases 1 to 3 considered in the preceding section, we may go on to the case where the domestic price of a_{1g}, including the tariff, may remain unchanged (Metzler's Case 3Z). Again there are three possible cases of price movement of a_{2g} to consider.

CASE 7. *The prices of duty and nonduty imports remain unchanged relative to b.* If the prices of b, a_{1g}, and a_{2g} remain unchanged, then AA_1, BB_1 and CC_1 would also remain unchanged and P_1 in Figure 4 would still be the equilibrium point on the production surface. This means that there will be no change of relative outputs following the tariff on a_{1e} in the duty-imposing country E and thus no change in income distribution.

CASE 8. *The price of duty imports remains unchanged and the price of nonduty imports rises.* On the basis of analysis in the previous sections, when the price of one of the domestic industries goes up relative to b, while the price of the other remains unchanged, also relative to b, the expansion of a_{2e} in the present case would be at the expense of the other domestic industry a_{1e} and the export industry. The effect of the tariff in E on income distribution depends upon whether the relative use of the scarce factor by the protected industry is more or less than, or equal to, that by the domestic industry a_{2e} competing with nonduty imports. Uncertainty arises if $(L_1/C_1)_{a_{1e}} > (L_2/C_2)_{a_{2e}}$. If, on the other hand, $(L_1/C_1)_{a_{1e}} \leqq (L_2/C_2)_{a_{2e}}$, the effect of a tariff on income distribution would be favorable to the scarce factor.

CASE 9. *The price of duty imports remains unchanged and the price of nonduty imports falls.* We know that under such circumstances, the factors of production released by the domestic industry a_{2e} competing with the nonduty imports may be absorbed both by the export industry b and the other domestic industry a_{1e}. Again the result on income distribution is uncertain if $(L_1/C_1)_{a_{1e}} > (L_2/C_2)_{a_{2e}}$, and unfavorable to the scarce factor if $(L_1/C_1)_{a_{1e}} \leqq (L_2/C_2)_{a_{2e}}$.

To sum up the analysis in this section, when the foreign demand for exports of the duty-imposing country E is inelastic, the domestic price of duty imports, including the tariff, may go up, go down, or remain unchanged relative to b. In the first group of cases where a_{1g} goes up relative to b we have exactly the same results as when the foreign demand for E's exports is elastic. In the second group of cases where the price of a_{1g} goes down, the effect on income distribution depends upon the price of nonduty imports. If the price of a_{2g} goes up or remains unchanged relative to b, the effect on income distribution becomes also dependent upon whether the relative use of the scarce factor by the protected industry a_{1e} is more or less than, or equal to, that by the other domestic industry a_{2e} competing with nonduty imports a_{2g}. In the case where the price of a_{2g} goes up the effect of a tariff on income distribution will be favorable to the scarce factor if $(L_1/C_1)_{a_{1e}} \leqq (L_2/C_2)_{a_{2e}}$. However, uncertainty arises if $(L_1/C_1)_{a_{1e}} > (L_2/C_2)_{a_{2e}}$. In the case where the price of a_{2g} remains unchanged, the effect of a duty on income distribution will be unfavorable to the scarce factor if

$(L_1/C_1)_{a_{1e}} \geqq (L_2/C_2)_{a_{2e}}$ and the result will be uncertain if $(L_1/C_1)_{a_{1e}} < (L_2/C_2)_{a_{2e}}$. If the price of a_{2g} goes down relative to b, then the expansion of b would be at the expense of both domestic industries and the effect of the duty on income distribution would be unfavorable to the scarce factor. The last group of cases is that in which the domestic price of a_{1g}, including the tariff, may not change. If the price of a_{2g} also remains unchanged, a tariff on a_{1g} has no effect on income distribution. In the case where there is an increase of the price of a_{2g}, the result on income distribution will be indefinite if $(L_1/C_1)_{a_{1e}} > (L_2/C_2)_{a_{2e}}$, and favorable to the scarce factor if $(L_1/C_1)_{a_{1e}} \leqq (L_2/C_2)_{a_{2e}}$. In the case in which there is a decrease of the price of a_{2g}, the result is uncertain if $(L_1/C_1)_{a_{1e}} > (L_2/C_2)_{a_{2e}}$, and unfavorable to the scarce factor if $(L_1/C_1)_{a_{1e}} \leqq (L_2/C_2)_{a_{2e}}$.

V

A summary of the conclusions of this paper is given in Table II. We find that in the framework of three commodities, the Samuelson-Stolper results, as amended by Metzler, imply the assumption that in

TABLE II.—SUMMARY OF RESULTS

Case	Domestic price of duty imports, including the tariff, in the duty-imposing country (a_{1g})	Price of nonduty imports in duty-imposing country (a_{2g})	The effect of duty on the scarce factor of production		
			$\left(\frac{L_1}{C_1}\right)_{a_{1e}} > \left(\frac{L_2}{C_2}\right)_{a_{2e}}$	$\left(\frac{L_1}{C_1}\right)_{a_{1e}} = \left(\frac{L_2}{C_2}\right)_{a_{2e}}$	$\left(\frac{L_1}{C_1}\right)_{a_{1e}} < \left(\frac{L_2}{C_2}\right)_{a_{2e}}$
1	+	0	favorable	favorable	?
2	+	−	favorable	favorable	?
3	+	+	favorable	favorable	favorable
4	−	0	unfavorable	unfavorable	?
5	−	+	?	favorable	favorable
6	−	−	unfavorable	unfavorable	unfavorable
7	0	0	no change	no change	no change
8	0	+	?	favorable	favorable
9	0	−	?	unfavorable	unfavorable

Notes:
+ means an increase of price of a_{1g} or a_{2g} relative to that of b, the export industry
− means a decrease of price of a_{1g} or a_{2g} relative to that of b, the export industry
0 means no change
? results uncertain on *a priori* reasoning
C stands for capital, the abundant factor
L stands for labor, the scarce factor

the duty-imposing country the domestic price of duty imports, including the tariff, must move in the same direction as the domestic price of nonduty imports. That is to say, when the former price goes up or down or remains unchanged relative to that of the export industry, the latter must also go up or down or remain unchanged relative to that of the export industry. This restrictive assumption underlying their analysis is not noticeable under the two-commodity case, because there are no nonduty imports in their system. When the price change of nonduty imports does not move in the same direction as that of duty imports, the factors of production can thus be transferred to the protected industry from both the domestic industry competing with nonduty imports and the export industry. Since the ratios of the scarce factor of protection to the abundant factor within the domestic industries may differ, the effect of a tariff on income distribution also becomes dependent upon whether the relative use of the scarce factor by the protected industry is more or less than, or equal to, that in the domestic industry competing with nonduty imports. Thus the price of nonduty imports and the relative use of the scarce factor within the domestic industries must be included among those data necessary for determining the effect of a tariff on income distribution.[22]

Mathematical Appendix

In general, the points where coordinates satisfy the relation $f(x, y, z)=0$ lie upon a surface and we say that the equation (in the first quadrant) represents this surface (Figure 4). Through P_1 pass a plane, include z-axis, and cut the surface curve at points AP_1A_1. The curve AP_1A_1 on this surface can be expressed in the equation:

$$y = k_1x. \tag{1}$$

To reduce the space equation to a line equation, we rewrite (1)

$$\frac{y}{x} = k_1. \tag{2}$$

Likewise pass a plane through P_1, include y-axis, and cut the space curve at BP_1B_1, thus

$$z = k_2x$$

or

$$\frac{z}{x} = k_2. \tag{3}$$

[22] This analysis still leaves many questions unanswered. Among them is the question as to the effects on income distribution of the imposition of a duty in cases involving relationships between complementary and substitution goods and means of production and finished goods, but the limitation of space does not permit the writer to consider such cases.

Similarly, pass a plane through P_1, include x-axis, and cut the space curve at CP_1C_1, thus

$$y = k_3 z$$

or

$$\frac{y}{z} = k_3. \tag{4}$$

Substitute x of (1) into (3)

$$\frac{y}{k_1} = \frac{z}{k_2}$$

or

$$\frac{y}{z} = \frac{k_1}{k_2} = k_3. \tag{5}$$

This means that if we shift one plane (surface curve), we should also change the other plane or planes so that the ratio $k_1/k_2 = k_3$ can be maintained.

We can prove our case with the use of the formula of a market plane tangent to the surface at the point P.

$$z - z_1 = \left(\frac{\partial z}{\partial x}\right)_p (x - x_1) + \left(\frac{\partial z}{\partial y}\right)_p (y - y_1).$$

If we let $z - z_1 = \Delta z$, $x - x_1 = \Delta x$, and $y - y_1 = \Delta y$, we have.

$$\Delta z = \frac{\partial z}{\partial x}\Delta x + \frac{\partial z}{\partial y}\Delta y.$$

Let us divide the above equation through by Δx and the limit taken as $\Delta x \to 0$ and then by Δy and the limit taken as $\Delta y \to 0$. The results are

$$\frac{dz}{dx} = \frac{\partial z}{\partial x} + \frac{\partial z}{\partial y}\frac{dy}{dx} \tag{6}$$

$$\frac{dz}{dy} = \frac{\partial z}{\partial x}\frac{dx}{dy} + \frac{\partial z}{\partial y}. \tag{7}$$

By similar reasoning,

$$x - x_1 = \left(\frac{\partial x}{\partial y}\right)_p (y - y_1) + \left(\frac{\partial x}{\partial z}\right)_p (z - z_1)$$

$$\Delta x = \frac{\partial x}{\partial y}\Delta y + \frac{\partial x}{\partial z}\Delta z$$

$$\frac{dx}{dy} = \frac{\partial x}{\partial y} + \frac{\partial x}{\partial z}\frac{dz}{dy} \tag{8}$$

$$\frac{dx}{dz} = \frac{\partial x}{\partial y}\frac{dy}{dx} + \frac{\partial x}{\partial z} \tag{9}$$

also

$$y - y_1 = \left(\frac{\partial y}{\partial x}\right)_p (x - x_1) + \left(\frac{\partial y}{\partial z}\right)_p (z - z_1)$$

$$\Delta y = \frac{\partial y}{\partial x}\Delta x + \frac{\partial y}{\partial z}\Delta z$$

$$\frac{dy}{dx} = \frac{\partial y}{\partial x} + \frac{\partial y}{\partial z}\frac{dz}{dx} \tag{10}$$

$$\frac{dy}{dz} = \frac{\partial y}{\partial x}\frac{dx}{dz} + \frac{\partial y}{\partial z}. \tag{11}$$

This means when a change of price of x as compared with y or z following a tariff occurs, a change of the relative prices and accordingly outputs of x, z, and y is bound to follow if the equality signs in (6), (7), (8), (9), (10), and (11) are to be maintained.

EXCESS LIQUIDITY AND EUROPEAN MONETARY REFORMS, 1944-1952

By John G. Gurley*

During the early postwar years in this country, there was much discussion concerning the probable effects of large liquid asset holdings on consumption and private investment spendings. Some economists, reasoning along strictly Keynesian lines, visualized these assets as influencing private spending only through changes in the interest rate. Many others, however, felt that excess liquidity would have a *direct* inflationary effect on the spending habits of both households and business firms. Nevertheless, few economists at this time were willing to argue that the conventional anti-inflationary measures were either unworkable or unfeasible in the face of so much excess liquidity. What was needed to turn aside the forces of inflation, it was argued, was a substantial government surplus[1] coupled with tight credit controls; many also urged the continuance of direct controls over prices and wages until these forces had subsided. The existence of excess liquidity was largely taken for granted with the result that, except for a few digressions, the discussion centered around the question of how inflationary these holdings would be and not around the question of how to rid the economy of them.

However, in many areas of Europe at this time, the second question commanded more interest than the first, primarily because it was generally agreed that there was imminent danger of hyperinflation if the volume of liquid assets were not drastically reduced.[2] Further, a wide-

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[1] Actually, of course, if one is free to alter both government expenditures and tax rates, there are many government deficits that would be just as deflationary as any given surplus.

[2] The difference in attitude between U.S. and many European economists on this question was due partly to the fact that the liquid asset-national income ratio was substantially higher in most European countries than it was in the United States after the war. However, whatever this ratio, quantity theorists tended to stress more vigorously the direct inflationary threat of these assets than did Keynesian theorists. In this connection it is interesting to note that where Keynesian doctrine in Europe was particularly strong—in England and the Scandinavian countries—either no steps to reduce excess liquidity were undertaken or else only token gestures in this direction were made.

spread feeling existed that if the assets were allowed to remain in the system they would undermine any monetary-fiscal program aimed at deflation. Through European eyes, the presence of large liquid asset holdings created a serious stumbling block in the path leading to inflation control. As a consequence, one of the principal anti-inflationary weapons used in this area of the world was monetary reform[3] which, in one way or another, swept away large portions of liquid assets accumulated by the public in the course of war and occupation. Many of these programs were designed to slow down the course of inflation and to prepare the way for the utilization of more orthodox anti-inflationary programs.

A study of the European monetary reforms, therefore, should throw some light on the broad topic of "the economics of excessively liquid economies." In this paper it is the intention of the author to consider: (1) the various ways in which the large liquid holdings of the European population were swept away, (2) the factors that induced many European countries to center their attacks on these holdings, (3) the degree of success attained by the programs, and (4) the conditions under which the monetary reform became a necessary part of any broad anti-inflationary program. It is hoped that this study will focus the attention of economists on a relatively neglected aspect of anti-inflationary policy, and that it will prove useful in further analysis of the rôle of liquidity.

I. *The Extent and Nature of the European Monetary Reforms*

The monetary reform was used widely throughout Europe during the post-World War II period. In fact, several countries in eastern Europe[4] relied upon this monetary device more than once, the most recent repeat performances taking place in Poland (October 1950), Rumania (January 1952), and Bulgaria (May 1952).

It was, however, a western European country, Belgium, which opened the attack on inflation in this manner by introducing a monetary reform program as early as October 1944, several months before the fighting within her borders terminated. Within a year, four other western European nations had followed suit, and these reforms were matched, or were soon to be matched, by a host of similar measures elsewhere.[5] Altogether, there were twenty-four monetary reforms in

[3] The expression, "monetary reform," has been used in the literature to describe a variety of monetary and banking programs. In this paper, however, it refers to those particular measures that reduced, or partially blocked for periods ranging from a few days to several years, the large liquid asset holdings of households and businesses.

[4] For the purposes of this paper, eastern Europe includes Finland, Greece, and all European countries (including the USSR) which now have communist governments.

[5] As we shall see, though, some of these programs were not designed primarily as anti-inflationary weapons.

Europe from the fall of 1944 to mid-1952. Some countries, such as Great Britain, Sweden, and Italy, did not utilize this technique at all; the majority employed it only once during the early years of the post-war period; and several, as mentioned above, used it two or three times.

The monetary reform, at one extreme, swept away the major portion of liquid holdings during the first few days of the program. At the other extreme, no reduction in the supply of liquid assets took place; instead, a small portion of the assets was blocked for a short period of time and then released to its owners. Inasmuch as the liquid assets affected by the programs generally comprised only banknotes and bank deposits—sometimes government and other securities were included—the monetary reform was at times similar to a capital levy applied to an extremely narrow base. It was a once-and-for-all "tax" on claims to wealth; however, in most cases no tax receipts accrued to the State, since the face values of the assets were written down, and to this extent a portion of the assets completely disappeared from the economy. When the assets were blocked (and not swept away), the reform was a "forced asset-holding" scheme, analogous to a program of forced saving out of current income. Finally, it was a "reform" in the sense that new banknotes were always issued for the old ones; in some instances, the unit of account was changed along with the entire price and wage structures.

II. *The Principal Types and Provisions of European Monetary Reforms*

Despite the almost endless array of provisions contained in the monetary laws, it is possible to group these programs into three general types, based on the manner in which the various countries dealt with the excessive supply of liquid assets in their economies. There were, first, those monetary reforms that reduced the supply of liquid assets at the outset without blocking any portion of this supply. This "mopping-up" operation was accomplished through the compulsory exchange of old banknotes and "old" bank deposits for new ones at rates of exchange which effectively reduced the outstanding volume of these assets. Each family and business firm was permitted to exchange its holdings of banknotes and deposits for new ones at the established conversion rate, say, three-to-one as in the 1947 Austrian program. Occasionally, however, some basic amount was allowed exchange rights at par, and other par exchanges were sometimes made for emergency cases or for favored groups. Once these exchanges were consummated, though, the program's initial objective was realized: individuals and businesses owned a smaller volume of liquid assets, but they were free to spend whatever remained.

The second type of monetary reform embodied no immediate reduc-

tion in the supply of liquid assets, but instead provided for the immobilization of a portion of this supply in the form of blocked deposits at banks. Again, banknotes were called in and bank deposits were declared by their owners during a specified period of time. In this case, each family and business firm was permitted to convert its old assets for new ones at a one-to-one ratio, but only a certain amount of new money was turned over to it for free use. The "excess assets" were placed in special bank accounts which in general could not be drawn upon for the purchase of current goods and services. In short, individuals and businesses retained in full their prereform holdings of these assets, since these holdings were all converted at par, but they were permitted to spend only a certain portion of them.

The third type combined the primary features of the other two. Currency and bank deposits were, first of all, converted into new money at deflated rates of exchange, but a portion of the amount remaining was in turn frozen in blocked accounts. One thousand units of a currency, for example, would be exchanged for five hundred new units, and, of this amount, two hundred and fifty of the new units would be tied up in accounts not usable for current transactions.

In all three types, the monetary provisions often called for the registration of securities, life insurance policies, personal property, and other forms of wealth. The authorities' primary interest in doing this was to survey the distribution of these holdings for the purpose of later capital levies or capital increment taxes. Only occasionally was the supply of financial assets, other than currency and deposits, reduced or partially blocked. In a few cases, though, government bonds were converted at deflated rates, and in one instance the public debt was cancelled by the monetary law.

Using the above classification as a guide, Table I lists the European monetary reforms in chronological order and classifies each as either Type One, Two, or Three. Since a series of two or even three reforms occurred in some of the countries, the successive reforms for any one of these countries are identified with Roman numerals after the name of the country.

The table records twenty-four separate monetary reforms from October 1944 to May 1952. Of this total, eight were of Type one, twelve of Type Two, and only four of Type Three. One-half of the reforms were introduced before the end of 1945, and since mid-1948 there have been only three reforms, all of them taking place in eastern Europe. Further, of the last seven reforms, five were undertaken in eastern Europe and only two—those of West Germany and France—occurred in west European locales.[6] The countries of western Europe

[6] The French program involved no more than a temporary blocking of the 5,000 franc banknotes.

TABLE I.—CLASSIFICATION OF EUROPEAN MONETARY REFORMS

Country	Month and Year of Reform	Types		
		One	Two	Three
Belgium	Oct. 1944		x	
Greece	Nov. 1944	x		
Poland I[a]	Dec. 1944		x	
Yugoslavia	Apr. 1945			x
France I	June 1945		x	
Austria I[b]	July 1945		x	
Denmark	July 1945		x	
Norway	Sept. 1945		x	
Netherlands[c]	Sept. 1945		x	
Czechoslovakia	Oct. 1945		x	
Austria II	Nov. 1945		x	
Hungary I	Dec. 1945	x		
Finland	Dec. 1945		x	
Hungary II	Aug. 1946	x		
Bulgaria I	Mar. 1947		x	
Rumania I	Aug. 1947			x
Austria III[d]	Nov. 1947	x		
USSR	Dec. 1947	x		
France II	Jan. 1948		x	
West Germany	June 1948			x
East Germany	June 1948			x
Poland II	Oct. 1950	x		
Rumania II	Jan. 1952	x		
Bulgaria II	May 1952	x		

[a] The Polish reform was carried out in three phases. In the first, ruble banknotes were exchanged at par for new zloty notes (December 1944); in the second, Cracow zloty notes were exchanged for new zloty notes (January 1945); and in the third, reichsmark notes were converted (February 1945).

[b] The initial Austrian reform was applicable only to those areas of the country occupied by the Soviet army.

[c] However, the Dutch called in and blocked 100 guilder banknotes in July 1945.

[d] The provisions of this program also affected deposits blocked under the previous two programs.

that made use of the monetary reform, with two exceptions, employed the Type Two program. Although a sprinkling of eastern European countries also resorted to this type, for the most part Types One and Three prevailed in this sector of Europe.

The Type One Reform

The Type One reform was first introduced in Greece in late 1944 when that country was in the midst of hyperinflation. About a year later, Hungary adopted the same type of reform to reduce her banknote circulation, and after this failed to halt inflation she repeated the pro-

gram, this time in a more vigorous and comprehensive fashion, and was successful. Shortly after this, Austria and the USSR undertook to dampen inflationary pressures with this type of program, the latter setting the pattern for the 1950 Polish, and the 1952 Rumanian and Bulgarian reforms. The prevalence of the Type One reform is largely explained by the attempts of two countries (Greece and Hungary) to stabilize economies plagued with hyperinflation, and by the desire (or necessity) of several Soviet-bloc countries to imitate the principal features of the USSR program of December 1947.[7]

Although each of these eight reforms provided for a reduction in the supply of liquid assets at the outset, without the utilization of blocking techniques, there were still many differences among their provisions.

TABLE II.—PRINCIPAL PROVISIONS OF TYPE ONE REFORMS

Country	Rates of Exchange	
	Banknotes	Bank Deposits
Greece	50 billion=1	50 billion=1
Hungary I	4=1	
Hungary II	200 million=1[a]	200 million=1[a]
Austria III	3=1	3=1
USSR	10=1	1=1; 3=2; 2=1[b]
Poland II	100=1	100=3[c]
Rumania II	100=1; 200=1; 300=1; 400=1[d]	50=1; 100=1; 150=1; 200=1[d]
Bulgaria II	100=1	4=1 to 200=1[e]

[a] This is in terms of the tax-pengoe. In terms of the so-called flat pengoe, the rate of exchange was 400 octillion-to-one!

[b] Rates applied to following ranges: 0–3,000; 3,001–10,000; over 10,000 rubles.

[c] Presumably only savings deposits were accorded this rate.

[d] Rates applied to following ranges: 0–1,000; 1,001–2,000; 2,001–3,000; and over 3,000 lei.

[e] The most favorable rates were accorded to savings deposits, deposits of private enterprises not exceeding the amount of the wage bill for the last month, and deposits of state and co-operative enterprises, offices, organizations, and foreign representatives. Other deposits were exchanged at either 100- or 200-to-one.

The principal differences were revealed in (1) the rates of exchange employed between old and new money, (2) the exchange rights accorded to holders of various types of liquid assets, (3) the exchange

[7] It probably would have been impossible for the Greeks and Hungarians to have stabilized their soaring price levels by means of temporary blocking techniques. What was needed, along monetary reform lines, was a fresh start, *i.e.*, a drastic reduction of the means of payment and a complete revamping of the price and wage structures.

Why the USSR chose the Type One reform is not altogether clear. P. A. Baran suggested that the administrative work connected with a blocking program would have been too formidable, and that, anyway, the peasants might not have tolerated such measures. See Baran, "Currency Reform in the USSR," *Harvard Bus. Rev.*, Mar. 1948, XXVI, 205. It is also true, however, that this type of reform had been used in the USSR in 1923. In the official text of the 1947 monetary law, the Soviets mentioned this precedent with much pride.

rights granted to owners of differing amounts of liquid assets, and (4) the rates of exchange applied on the basis of the identity of the owner himself. Table II records the provisions which reflect most of these differences.

The exchange rates employed in the reforms varied all the way from one-to-one (applied only to small deposits) in the USSR to 50 billion-to-one in the Greek reform.[8] The first Hungarian program contained a ratio between old and new banknotes of four-to-one, but in the second reform the rate of 200 million-to-one was adopted (or, 400 octillion-to-one in terms of the flat pengoe), reflecting the degree of inflation which had taken place in that country between the last month of 1945 and mid-1946.[9] In the USSR, the conversion rates ran from one-to-one to ten-to-one, while in the 1950 Polish program they reached 100-to-one, and in the Bulgarian (II)[10] and Rumanian (II) reforms, 200-to-one and 400-to-one, respectively.[11] In almost all cases, coins and small denomination banknotes were exempted from the conversion laws.

Not only were there wide differences among the conversion rates used by these countries, but distinctions were sometimes made on the basis of the type of liquid asset owned by the family or business firm. Thus, the Soviet Union "taxed" all banknotes at ten-to-one, but permitted bank deposits more favorable treatment. The same procedure was adopted in the Rumanian (II) reform in which bank deposits were hit only half as hard as comparable holdings of banknotes. The provisions of the Hungarian (I) reform affected only banknotes, leaving bank deposits untouched, while in Poland (II) and Bulgaria (II) savings deposits were highly favored over banknote holdings. These provisions were sometimes used to strike particularly hard at a certain group known to be in possession of a large volume of one type of asset—such as the banknote-holding peasants in the USSR—or to discourage black

[8] The text of the USSR reform may be found in the *New York Times*, Dec. 15, 1947, p. 6. See also Baran, *op. cit.*, pp. 194-206. and Charles Bettelheim, "La Réforme Monétaire Soviétique," *Rev. Econ.*, Oct. 1950, pp. 341-53. For information on the Greek reform, see D. Delivanis and W. C. Cleveland, *Greek Monetary Developments 1939-1948* (Bloomington, 1949), pp. 110 ff., and the annual *Report of the Bank of Greece* for each of the early postwar years.

[9] For an account of the Hungarian reforms, see N. Kaldor, "A Study in Inflation, I—Hungary's Classical Example," *The Manchester Guardian Weekly*, Nov. 29, 1946, p. 299; *idem.* "Hungarian Inflation, II—Stabilisation," *ibid.*, Dec. 13, 1946, p. 331; B. Nogaro, "Hungary's Monetary Crisis," *Am. Econ. Rev.* (Sept. 1948), XXXVIII, 526-42; and *The Stabilisation of the Hungarian Currency* (Budapest, 1946).

[10] Throughout the remainder of the paper, the Roman numeral will indicate whether it is the first, second, or third reform to which reference is made.

[11] The principal provisions of the Polish program may be found in *Internat. Financial News Surv.*, Nov. 3, 1950, III, 142; the Rumanian reform in *ibid.*, Feb. 8, 1952, IV, 238; and the Bulgarian reform in *ibid.*, May 30, 1952, IV, 368-69.

market activities usually engaged in with large denomination banknotes, or, finally, to encourage the depositing of currency in savings deposits for the purpose of decreasing the velocity of circulation.

The third distinction was based on the amount of liquid assets owned by individuals and business firms. While, as mentioned above, the Soviets gave more favorable treatment to bank deposits than to banknotes, they also favored small holders of these deposits over large holders. In Rumania (II), small holders of either banknotes or deposits were favored over large holders, the rates ranging from 100-to-one to 400-to-one for banknotes, and from 50-to-one to 200-to-one for bank deposits. Apparently, owners of small savings deposits in Bulgaria (II) also received special treatment. The progressive rates employed by these reforms were largely designed to bring about a more equal distribution of liquid assets, to hit certain capitalist elements with particular severity, or to achieve other social goals.

Finally, the fourth distinction was based on the identification of the owner of the assets. Thus, in Bulgaria (II) all deposits held by private businesses were converted at the highly unfavorable rate of 200-to-one. The Austrian (III) reform granted special treatment to farmers so far as their banknote holdings were concerned and small depositors were hit lightly.[12] In some cases, deposits owned by governmental units, financial institutions, and charitable and religious organizations were either exempted or treated in a special manner.

In most of the Type One reforms, not only were "excess assets" swept away, but also large portions of transactions balances, at pre-reform price and wage levels, were eliminated by the monetary provisions. Whenever this occurred, it was necessary for the authorities to lower the price and wage structures in their economies to fit the new, lower level of liquid assets (money supply). Thus, a reduction of liquid assets in the ratio of 50- or 100-to-one did not mean that the *real* value of these assets was reduced to that extent, since prices and wage-rates were lowered simultaneously. Several countries chose this course because their pre-reform inflated price and wage levels were already far out of line with others, and because such a course seemed to offer the best method for "breaking the back" of the inflationary spiral.

In the Bulgarian (II) reform, for example, the *average* conversion rate for liquid assets was about 100 old leva for 2.4 new leva, while most prices and wage-rates were converted in the ratio of 100-to-four. The same reduction in the real value of liquid assets could have been achieved if the assets had been converted in the ratio of 100 old leva

[12] For the main outlines of the Austrian reform, see F. H. Klopstock, "Monetary and Fiscal Policy in Post-Liberation Austria," *Pol. Sci. Quart.* (Mar. 1948), LXIII, 122-23.

for 60 new leva, with prices and wage-rates remaining unchanged. The Hungarians (II) also revamped their price and wage structures, and in Rumania (II) these "flow magnitudes" were lowered by about 80 per cent at the time of the monetary reform. On the other hand, the Austrians (III) and the Hungarians (I) converted prices and wages at par, while in the USSR wages and other regular payments were converted at par, but the price system was unified and a general lowering of the price level occurred.

The Type Two Reform

The Belgians were the first to experiment with the Type Two monetary reform, the main features of which were copied several months later by Denmark, the Netherlands, Norway, and Czechoslovakia.[13] Both Finland and France (II)[14] utilized this technique for the temporary blocking of banknotes, and a few of the eastern European countries, before they became allied with the Soviet orbit, introduced reform measures of this type.

There were generally three phases to this type of monetary reform. First, the major portion of banknotes and bank deposits was blocked during the initial days of the program. Second, certain basic allotments and releases were made to individuals and business firms so that normal economic activity might continue. Third, the funds, or part of them, which remained blocked after the primary releases were consummated were gradually deblocked either through individual requests to a deblocking committee, through blanket releases that spanned all deposits, or by other means.

Within this framework, however, each country went about the tasks of first immobilizing and then demobilizing a portion of the liquid asset supply in its own way. In some cases, the formulas chosen were quite simple, but in other instances they were so complex as to defy under-

[13] Descriptions of these programs are found in V. A. deRidder, "The Belgian Monetary Reform," *Rev. Econ. Stud.*, 1947-48, XV (2), 51-69; *idem*, "The Belgian Monetary Reform: An Appraisal of the Results," *ibid.*, 1948-49, XVI (1), 25-40; *Reports and Accounts*, Danmark Nationalbank, 1945, pp. 30-34; *White Paper Regarding the Measures for the Currency Rehabilitation in the Netherlands* (The Hague, 1947); *De Nederlandsche Bank Report for 1946* (Amsterdam, 1947), p. 27, and same *Reports* for later years; Kaare Peterson, "The Monetary Reconstruction Program in Norway," *Norwegian American Commerce*, Feb. 1946, XI, 3-21; and *National Bank of Czechoslovakia Bulletin*, Mar.-Apr. 1948, pp. 1-5 in annex.

For more general accounts, see R. W. Bean, "Results of Monetary Reforms in Western Europe," *Fed. Res. Bull.*, Oct. 1946, XXXII, 1115-22; F. H. Klopstock, "Monetary Reform in Liberated Europe," *Am. Econ. Rev.*, Sept. 1946, XXXVI, 578-95; *idem*, "Western Europe's Attack on Inflation," *Harvard Bus. Rev.*, Sept. 1948, XXVI, 597-612.

[14] See, *Bank of Finland Monthly Bulletin*, Jan.-Mar., 1946, pp. 1-2 and p. 30; A. Snider, "French Monetary and Fiscal Policy," *Amer. Econ. Rev.*, June 1948, XXXVIII, 309-27; and Banque de France, *Compte Rendu des Opérations*, 1948, pp. 7-8.

standing by the majority of the population; moreover, some of the programs were dragged out for several years after their introduction.[14a] A few of the Type Two reforms initiated in 1945 were still in the process of liquidation as late as the winter of 1951.

The provisions making up the first phase of these reforms varied somewhat from country to country. In most cases, though, the reforms exempted coins, small denomination banknotes, and certain deposits from the initial blocking regulations. The primary reason for exempting coins and small notes was to reduce the volume of administrative work during the currency exchange period. The exempted bank deposits generally included those held by financial institutions, governmental units, other public or semipublic bodies, and charitable and religious organizations. In these cases, all other bank deposits, together with the larger denomination banknotes, were placed in blocked accounts. However, some programs were quite limited in scope. For example, Finland's law hit only 500, 1,000 and 5,000 mark banknotes, leaving the smaller notes and all bank deposits untouched. In France (II), only 5,000 franc notes were subject to the blocking provisions, while the first Austrian reform blocked only bank deposits. In the majority of cases, though, large portions of the liquid asset supplies came under the blocking regulations.

In the second phase of the programs, the basic allotments and releases of funds were made on several bases: (1) per capita; (2) the average monthly wage bills of employers; (3) the date on which the deposit was first opened; (4) the type of liquid asset owned; and (5) the amount of liquid assets owned. The per capita allotments were made so that consumers would have enough to live on until their next pay checks. The releases to employers enabled the flow of wage and salary payments to be resumed. Finally, the partial deblocking of deposits was oftentimes accomplished on discriminatory bases—favoring all deposits opened before the outbreak of war ("good deposits"), treating more harshly those opened during the occupation ("bad deposits"), in a

[14a] The provisions in the Netherlands and Austria were so involved as to be almost beyond imagination. One need only mention that during the life of the Dutch program—it lasted for over six years—there were free deposits, clearing accounts, blocked accounts, option accounts, investment accounts, and several other forms under which funds were tied up. In Austria, after the appearance of the second reform in 1945, there were six different types of deposits in existence. The distinctions were based on the zone in which the individual resided, the date the bank deposit was opened, and the reform under which the deposit was regulated. By the time the third reform came along—the provisions of which cancelled outright some deposits, converted others on a deflated basis, left others untouched, converted a few into forced loans, and blocked still others for a short period of time and the remainder for longer periods—the average depositor was sorely pressed to determine what he fully, only partially, or did not own. The Belgian program also became tangled in many complications, and in Czechoslovakia a Currency Liquidation Fund had to be introduced to administer the final stages of that program.

few cases favoring savings deposits over other types of asset holdings, and usually granting somewhat larger percentage releases to owners of small holdings than to the wealthier owners.

The third and final phase of these reforms—the gradual deblocking of all, or part of, the immobilized funds—was pursued with some marked differences from country to country. These differences were revealed in (1) the methods used to deblock funds, (2) the percentage of funds ultimately returned to their owners, and (3) the rapidity with which the funds were returned. We will briefly consider each of these.

There were generally four types of releases made: (a) releases, on special request, to individuals who had been especially hard hit financially by the war and occupation, or to invalids, oldsters and others; (b) releases for the payment of taxes, the purchase of government bonds, and in some instances for the purchase of insurance policies and other financial and real assets; (c) automatic blanket releases after a specified period of time had elapsed; and (d) discretionary blanket releases in the light of the economic situation as it developed month by month. Many countries relied upon all four methods of releasing funds, but even in these cases the emphasis was often quite different.

There were also differences with respect to the percentage of blocked accounts ultimately released to their owners. In a few instances, all, or almost all, of the blocked funds were returned. This was true in France (I and II), Denmark, Norway, and Finland. In other countries, large portions of these funds were wiped out in one way or another in the later stages of the programs, and in these cases the reforms were, in effect, similar to the Type One programs, in which the total supply of liquid assets was reduced at the outset. In Belgium, for example, after the initial allotments were made, the authorities segregated all blocked deposits into two categories: temporarily blocked deposits (40 per cent of the total), and permanently blocked deposits (60 per cent of the total). The latter portion was largely eliminated by the conversion of these deposits into forced loans and the subsequent redemption of the loan certificates with funds derived from special capital levies. To some extent, this path was also followed in the Netherlands, Czechoslovakia, and Bulgaria (I). In one country, Austria, the authorities simply cancelled a portion of the blocked deposits.

Finally, of the funds ultimately released, a major portion of them was released in a few days or weeks in some countries, while in others the programs continued for years. In France (I) the funds were released almost immediately, in France (II) and Denmark, after only a few months, and in Belgium, the Netherlands, and Norway, only after several years. The percentage of funds released and the rapidity with which they were released depended primarily upon the objectives of the programs. Whenever the principal objective was to contain inflation,

the funds were usually deblocked slowly and then only in part. In other cases, the bulk of them was released rapidly.

The Type Two programs were, on the whole, quite different from the Type One reforms with respect to their treatment of prices and wages. In the former, the flow magnitudes of the economy were generally left unchanged, while in the latter, as we have seen, they were often drastically altered. The primary purpose of the authorities in carrying out many of the Type Two reforms was simply to skim off the excess liquidity, at prereform prices and wages. Thus, although the average Norwegian had less liquid assets after monetary reform than he had before, the prices he paid for consumer goods and the wages he received were approximately the same a week after the reform as they had been just prior to it.

The Type Three Reform

Enough has been said above to make it unnecessary to delve deeply into the provisions of the Type Three monetary reform, inasmuch as these programs incorporated the principal features of the other two types. In this set of reforms, the liquid asset supply was reduced at the outset by the application of deflated rates of exchange to old currency and deposit holdings, but, in addition, a portion of the remaining supply was frozen in blocked accounts.

The reform carried out in West Germany in 1948 offers a typical example of the measures to be found in this hybrid type of program.[15] In that country, all banknotes were called in and bank deposits were declared between June 20 and 26. Each person then received 60 new deutschemark notes (DM) for 600 old reichsmark notes (RM). Employers were presented with 60 DM per employee for 600 RM.[16] Most bank deposits were converted at the same rate—10 RM for 1 DM—and one-half of the resulting DM balances was freed and the other half blocked. During October 1948, 70 per cent of the blocked balances were cancelled, 20 per cent were transferred to a free account; and 10 per cent were made available for investment in certain securities to be specified later.

The Soviet-sponsored reform in East Germany was quite similar to the program conducted in the western zones.[17] One difference, however,

[15] There is a wealth of material available on this reform. See, for instance, F. A. Lutz, "The German Currency Reform and the Revival of the German Economy," *Economica*, May 1949, XVI, 122-42, and H. Mendershausen, "Prices, Money and the Distribution of Goods in Postwar Germany," *Am. Econ. Rev.*, June 1949, XXXIX, 646-72.

[16] It was at first believed that the initial per capita and employee allotments were made at par. The actual rate of exchange was not made apparent until a week later.

[17] See, Haut-Commissariat de la Republique Française en Allemagne, *Étude d'Ensemble sur la Situation Economique et Financière de la Zone Soviètique d'Occupation en Allemagne de 1945 à 1950* (Berlin, Mar. 31, 1950).

was that savings deposits were converted at differential rates: one-to-one for the first 100 marks, five-to-one for the next 900, and ten-to-one for all in excess of 1,000 marks. The first Rumanian reform was also patterned along these lines, except that the amount of the initial allotment was more dependent on the economic class in which the individual found himself.[18] For example, farmers were highly favored as to the amount of banknotes that they could exchange for new ones. On the other hand, unemployed persons, military personnel, and individuals in work camps and prisons were permitted to exchange substantially smaller sums. Moreover, certain commercial firms were granted no conversion rights at all. The exchanges were made at the rate of 20,000-to-one, and, in addition, a portion of the new funds was blocked and only gradually released in the later stages of the program.

The monetary reform in West Germany was accompanied by a general decontrol of prices and wages, while in Rumania (I) the price and wage structures were completely revised and lowered. East Germany and Yugoslavia apparently maintained the flow magnitudes at approximately the same levels and kept them under controls.

III. *Objectives of the Monetary Reforms*

The European reform programs had a variety of objectives. There were first those objectives which were concerned with the prevention or the termination of inflationary spirals. Other objectives were concerned with surveys of asset distribution, the redistribution of asset holdings, and the achievement of other social goals.

Anti-Inflationary Objectives

The principal aim of many of the monetary reforms was to dampen without delay the inflationary pressures on prices and wages which appeared in force throughout Europe during the early years of the post-war period. It was generally expected that the reduction or partial blocking of liquid assets would achieve this end by reducing aggregate demand for goods and services, increasing incentives toward work, and decreasing the hoarding of goods.

The monetary reform was expected to reduce private spending in two ways. First, it was anticipated that the loss of liquidity by families and businesses would make them feel poorer, and hence out of a given disposable income less would be spent for consumption and investment goods. The removal of excess liquidity from the economy, accompanied by tight controls over bank loans, would, it was anticipated, render it

[18] The basic provisions of this reform may be found in *Bulletin d'Information et de Documentation,* Banque Nationale de Roumanie, July-Sept. 1947, pp. 152-55.

impossible for large-scale private deficit spending to occur. These expectations prevailed even in those cases in which the supply of money was not reduced at the outset, but only partially blocked for varying periods of time. Second, the very act of complying with the provisions of the monetary reforms—*e.g.*, standing in long lines before banks to surrender (permanently or temporarily) the major portion of one's liquid funds—would dampen individuals' expectations of rising prices, and it would induce them to spend less out of disposable incomes. Thus the technical provisions of the monetary reform would reduce (or partially block) the money supply, and the "psychological shock" of the program as a whole, it was thought, would decrease income velocity. In a few countries, special emphasis was placed on the shock effect as the principal virtue to be expected from the monetary reform.

The reform, by suddenly reducing the supply of liquid assets available to individuals, was also expected to increase incentives toward work. The excessive supply of these assets—relative to money national income—that was generated during the war and occupation by government deficits and export surpluses led many workers to take extended vacations after liberation. In a few countries, such as West Germany, the volume of liquid assets owned by a sizeable portion of the population was probably equivalent to one or two years' supply of consumer goods which individuals could reasonably expect to purchase under existing rationing measures. Consequently, many workers in these countries left their jobs, or worked part-time only, since an extra unit of currency from work had a zero or negative net marginal utility, whereas an extra free hour during the day to loaf or scout around for "deals" had substantially more. The monetary reform was expected to send the majority of the vacationers and "non-producers" scurrying back into the labor force as soon as they found themselves without funds.

Finally, it was anticipated that the loss of liquidity by merchants would induce them to relinquish their hoardings of inventories, and that this in turn would halt the price increases and at the same time convince the population that the reform had brought about an increase in the supply of consumer goods. Expectations of falling prices would then become prevalent and would serve, it was hoped, to dampen current spendings. The reforms were supposed to dry up black market activities and make it profitable for merchants to offer, and possible for individuals to purchase, the bulk of consumer goods in legitimate trade channels.

Other Objectives

Not all of the reforms, however, were introduced primarily for anti-inflationary purposes; in several instances, these considerations did not

even constitute immediate secondary objectives. The authorities in some countries initiated the reform programs in order (1) to conduct a survey of liquid asset distribution, (2) to redistribute liquid holdings, or (3) to achieve other social goals.

The distributional surveys were expected to serve several purposes. First, they were to prepare the way for subsequent capital levies and capital increment taxes. Capital levies were very popular in postwar Europe, and whatever success some of them had was in no small part due to the data collected during these asset inventories. The pertinent provisions called for the declaration of banknote, deposit, and security holdings, and at times other assets, as we have seen, such as insurance policies and jewelry had to be revealed. The levies were generally not designed as anti-inflationary but rather as burden-sharing measures, and in this sense the monetary reform was an indirect means of redistributing asset holdings.[19]

An aim common to all of the earlier reforms was to prevent the infiltration of old banknotes and other assets that had been carried outside the country during the occupation. This was taken care of in part by the currency provisions which declared all outstanding banknotes no longer legal tender, and which offered the opportunity to each person to exchange his old notes for new ones. By this technique the authorities were able to take stock of the banknotes still within their borders and to make certain that they (the authorities) would not be subject to future competition from potential "monetary authorities" outside the country who held large amounts of the old notes.

Another purpose of the surveys, widely advertised by many of the governments, was to catch black-marketeers and other illegal operators. As old banknotes were turned in for new ones, the authorities made special note of those individuals converting large amounts of high denomination bills—the types generally used for nefarious purposes. In many cases, deblockings were not granted until the sources of funds had been thoroughly investigated by the authorities. Lastly, the survey data were often compared with prewar data on asset holdings in order to locate the large income recipients of the occupation period, the purpose being the collection of long-overdue income taxes.

[19] It was generally recognized that the monetary reform hit only a narrow range of assets, permitting all other assets to escape. But it was sometimes assumed that those who had profited the most during the occupation had had insufficient opportunities to dispose of their liquid holdings. Also, some governments desired to remove a portion of liquid funds from circulation only temporarily. Since these funds were due to be returned to their owners, it was felt that it would be a waste of time to compute the contribution of each person on any other basis. Most of the authorities, however, planned to "equalize the burdens" by means of capital levies at a later date. Almost all countries went through the motions of applying these levies, but in many cases they were weak measures and only in small part corrected the original "inequities."

The second general objective of the reforms, more prevalent in eastern than in western Europe, was to redistribute liquid asset holdings; when the reforms were accompanied by wholesale alterations of the price and wage structures, they were often expected to redistribute incomes, too. The large volume of liquid assets, unquestionably distributed in a more uneven fashion than postwar incomes in many areas of Europe, threatened to swing a heavy share of current output toward the large asset-holding groups if they chose to reduce their holdings. Many governments, especially in eastern Europe, sought to stave this off through the reform provisions. For example, large asset holders were often accorded relatively unfavorable terms upon which their old assets could be exchanged for new ones. Prices and wage-rates were then reset to make it difficult for these same groups to accumulate large asset holdings in the future.

Finally, in some eastern European reforms, other social goals were envisaged by the authorities. These included the suppression of "capitalist elements," the achievement of farm collectivization programs, and the general strengthening of the government's position for the pursuit of future social programs. The attempt to attain these goals was reflected, in part, in the unfavorable conversion rights granted to private enterprisers and independent farmers. Also, in several cases, the reforms were introduced at the end of pay periods, which guaranteed that the workers would be caught with few cash balances, and thus would suffer relatively little from the exchange provisions.

As stated above, the majority of the reforms were intended to combat inflation. All of them, however, were concerned with other objectives as well, while a few in western Europe were initiated almost exclusively for other than deflationary purposes.

IV. *Evaluation of the Monetary Reforms*

Achievement of Objectives

How successful were the monetary reforms in achieving these objectives? Aside from their anti-inflationary aims, they appear to have been successful in the majority of cases. The banknote exchange provisions *did* alleviate several of the currency disturbances arising out of the occupation, and they enabled the authorities to counter, to some extent, black-market activities. The blocking measures presented a breathing spell to governments during which time distributional data were collected. These data were then used to make capital levies more effective. When progressive conversion rates were employed, assets were redistributed in a matter of days. When these and other forms of discriminatory rates were used, certain economic classes were probably rendered

impotent, or at least they became more amenable to their government's desires.

The reforms in France (I and II), Denmark, and to a large extent in Norway were primarily designed to achieve several of these objectives, for after the banknote exchanges and the asset inventories had been made, all or most of the blocked funds were promptly returned to their owners. In fact, France (I) did not even bother to block deposits at all, while the Danish law stated that part of the blocked funds would be released a month after the initial blocking, and the remainder three months later. Within three or four months after the introduction of the Norwegian program, the major portion of blocked accounts was released. Since, by and large, these programs accomplished what they set out to do, they must be judged successful. However, considering only the above objectives, most of the other reforms succeeded, too. For example, it appears beyond doubt that several of the eastern European countries were successful in significantly redistributing liquid assets and in furthering other socialist programs via the monetary reforms, even though these reforms were principally conceived as anti-inflationary weapons.

But the majority of the monetary reforms should be judged primarily with respect to their anti-inflationary aims, and from this standpoint the reforms on the whole were disappointing. In fact, several of them were outright failures. It is, of course, extremely difficult, if not impossible in many cases, to separate the effects of the reforms from those of other events and policies occurring simultaneously or shortly afterwards. In Belgium, for instance, only fair success seems to have been attained, but shortly after its monetary program, the Belgian government was compelled to run substantial deficits in order to meet certain expenses connected with the presence of Allied armies within her borders. These deficits almost swamped the initial, favorable effects of the reform, and render it virtually impossible to judge what the full impact of the reform might have been. The same may be stated for the Austrian (II) case, while in several of the eastern European countries the presence of tight controls over prices and wages, the radical changes in political power, the growing proportion of socialized ownership of the means of production, not to mention the lack of available data and the recent dates of three of these reforms, make it especially difficult to appraise the programs.

In a few cases, though, the verdict appears to be clear-cut. In western Europe, the reform that achieved the most impressive results was that of West Germany, and of these results the most dramatic were the return to the work force of many workers from "unproductive" occupations and idleness, and the reduction of absenteeism in the factories.

As a consequence, real output increased sharply in this country during the half-year following the sudden reduction of liquid assets. In addition, a day or two after the monetary reform the supply of goods in legal channels increased as if by magic. Although this phenomenon was due almost entirely to the diversion of goods from "black" to legitimate channels and to the dishoarding of goods by merchants who had anticipated the currency measures, the fact remains that the shop displays were sufficiently impressive to convince many that the worst was over—that consumer goods would henceforth be easily available at "reasonable" prices. Current spending patterns responded accordingly. To a lesser extent, the same phenomena appear to have taken place in Austria (III), the Netherlands, and a few other countries. In eastern Europe, most facts indicate that the USSR and Hungary (II) had a large measure of success with their reforms. Not enough time has elapsed to warrant any statement about the second reforms in Poland, Rumania, and Bulgaria.

On the other hand, Finland, Greece, and Austria (II) apparently had little or no success in dampening inflationary pressures with monetary reforms. The same may be said for the Polish (I), Rumanian (I), and Bulgarian (I) reforms, and there is no doubt that the first Hungarian program failed miserably to halt inflation. Also, inflationary pressures were not quelled to any significant extent by either the French (II) or Czechoslovakian measures.

Thus, here and there, some dramatic, anti-inflationary results were attained by countries utilizing the reforms, but there were several failures and, it appears, many partial successes only. The persistence of inflation throughout most of Europe during 1946-47, and the necessity of several countries to resort to the monetary reform a second or third time, is evidence that all of these programs did not enjoy complete success. One is forced to conclude that, on the whole, the programs achieved much less than had been expected of them.

Some Causes of Failure

What were the reasons for the complete or partial failure of some of these programs? First, the reforms were not capable of overcoming many of the supply (of goods) difficulties of the early postwar period. Second, in practice they probably did not reduce private spending to any appreciable extent. Third, they were accompanied by inappropriate government policies and other unfavorable events.

In the face of large private demands, real output in many areas of Europe during the early postwar years remained far below prewar levels. This was not due to a large volume of involuntary unemployment, but rather to such factors as the wartime destruction and neglect

of capital equipment, the neglect of land fertility, the loss of land area to the USSR, the depletion of inventories, the incapability of many to work at normal speeds for an average workday because of mental exhaustion and undernourishment, and finally to voluntary idleness. In so far as the last phenomenon was caused by excessive liquid holdings, the monetary reforms were capable of affecting work incentives, and hence dampening inflationary pressures. In some countries this was a significant factor and it was here that the reforms achieved some of their most impressive results. But, in other countries, this was not an important element in the inflationary picture, and in all cases the reforms were not designed to cope with the other supply difficulties. However, compared with other anti-inflationary weapons, the monetary reform from this standpoint was not unique; other measures would probably have fared no better and, as we shall observe below, might well have proved less effective in increasing work incentives.

The reforms were also weak anti-inflationary measures because they failed in many instances to reduce appreciably private spending. It is probable that the most serious shortcoming of these monetary programs was that they relied almost exclusively on the liquidity effect to dampen spending, and left untouched real disposable incomes; the latter were not directly affected since prices, wage rates, and other regular payments were either converted at par, or were lowered proportionately.[20] In many instances, it is possible that the liquidity effect would have been weak even if the programs had been carried out in the most effective manner. There is, of course, no way to prove this, but it can be said that, whatever the maximum liquidity effect might have been, in practice this force was probably quite weak in a number of countries for several reasons.

First, even when liquid assets were reduced at the outset of the programs, it was not impossible for families who, in the absence of the reform, would have spent less than their incomes to maintain their same rates of spending if they so desired. Some of the reforms in fact encouraged them to maintain these rates, since funds were blocked only temporarily with the tacit understanding that most or all of them would be returned eventually. It is inconceivable that temporary blocking of this sort could have had much influence on the spending habits of many families.

Second, in many cases, a large number of families probably lost little through the currency exchange provisions. To begin with, liquid assets were undoubtedly so heavily concentrated in the upper-income classes that many families in some of these countries had nothing much to

[20] In a few cases, it appears as though substantial redistributions of disposable incomes took place, which undoubtedly altered spending patterns, too.

lose during the exchange process. Since their current (real) incomes remained approximately constant, these families might well have maintained their prereform spending rates. It should also be recalled that several reforms utilized progressive conversion rates, so that even if low- and middle-income groups held sizeable blocks of liquid assets, they were often hit lightly. Furthermore, some reforms did not affect a large proportion of total liquid holdings in any case. For example, the Finnish program hit only 8 per cent of total currency and deposits. In France (II), only 5,000 franc notes were affected, while in Hungary (I) all deposits escaped the exchange provisions. Moreover, in almost every case, government and private security holdings, life insurance policies, and other forms of liquid wealth were not subject to the conversion laws. Such partial reductions probably had little effect on either consumer or business spending.

In some of the blocking programs, not only was the public under the impression that its funds (or most of them) would be released in time, but large portions of these blocked accounts actually were released so rapidly as to negate whatever favorable effects the reforms might have initially enjoyed. Funds were not only readily deblocked for the payment of taxes, the purchase of government securities, and for emergency expenditures (the latter were sometimes defined as those expenditures which the family was in the habit of making but which it could not make now that its funds were blocked!), but blanket releases were made in such volume as to quickly undermine the reform measures. This was true in varying degrees in Belgium, Czechoslovakia, Austria (II), and the Netherlands.

Finally, in practice, the liquidity effect may also have been weak due to the fact that some of the reforms might have given rise to anticipations of second or third programs. To the extent that this was true, individuals and businesses would be reluctant to hold currency and deposits for fear that these assets would be hit again. To protect oneself against the type of monetary reform conducted in Europe, one had only to consume income or to hold wealth predominantly in either real assets or, in most cases, private securities. There is some evidence that the Austrians and Hungarians reacted unfavorably to their initial reforms, and it would be surprising if families in Rumania, Poland, and Bulgaria were not at this time hesitant to hold the types of assets affected by the two reforms in each of those countries. One monetary reform may not give rise to a flight from money, but it is extremely doubtful that most individuals will remain calm after a second or third program within, say, a five-year period. It is probably true that monetary reforms are also subject to diminishing returns.

Through no fault of their own, several of these measures failed to

halt inflation because of inappropriate government actions which accompanied or shortly followed them. These included relatively high government expenditures coupled with inadequate tax receipts, and easy bank credit policies.

Government expenditures in many European countries during 1945-46 were "necessarily" large for a number of reasons. First, several countries were compelled to meet partially the expenses of the Allied armies situated within their borders. Others were required to pay reparations, and all felt obligated to meet partially the costs of reconstruction of homes and factories, the rehabilitation and relocation of large segments of the population, and other social welfare programs. Primarily in eastern Europe after 1947, but also in some western European countries (such as Norway), heavy industrialization programs necessitated large government outlays. These spendings, coupled with large private spendings out of relatively high disposable incomes, soon offset, in some countries, the initial, favorable effects of the reforms.

But, would it not have been possible to boost tax rates to levels sufficiently high to offset the inflationary impact of these governmental outlays? There are simply too many countries under consideration here to permit a general answer to this question. However, a few factors, common to most countries, suggest that an all-out *income* tax program in 1945-46 to accompany the monetary reforms might not have been feasible or possible. Many governments were not able to move rapidly in the income tax field for lack of trained personnel to handle the job. In some instances, it would have required years to gather together and train these personnel.[21] But, even if the administrative set-up had been adequate, it was considered quite likely that higher income tax rates might yield only a small increase in tax revenues. Tax morality was at its lowest ebb immediately after liberation, in large part because the evasion of regulations during the occupation was considered by many as honorable, and these attitudes were carried over into the postwar period. When this factor was linked, in the minds of the authorities, with the longstanding propensity of farmers and other groups, in some areas of Europe, to evade taxes, income taxation as a main weapon

[21] Nor was it possible for many of these governments to impose widely based capital levies immediately after the war. The pertinent information of wealth distribution was not on hand, and it would have required months, perhaps years in some cases, to bring together these data. On the other hand, the monetary reform dealt only with those assets whose ownership patterns were known, or could be known in a short period of time. Bank deposits were ideal assets from this standpoint, while banknotes, unlike bathtubs and land, could be recalled and exchanged for new ones on the terms set by the authorities. The major share of the administrative tasks fell on existing financial institutions which had only to increase their staffs to handle the extra loads. These tasks were lightened, of course, by the very nature of the assets affected, which made evasion of the provisions of the law practically impossible.

against inflation did not seem to offer much promise of success. In any case, however, the fact remains that an inadequate tax program, given the relatively high levels of government expenditures, upset the reform's applecart in several of these countries.

The initial effects of a few of the reforms were also negated by credit policies which were incapable of preventing sharp increases in bank loans to businesses and individuals subsequent to the monetary reforms. If funds could not be deblocked, large private spendings were occasionally financed by supplementing current incomes with bank borrowings; sometimes, the collateral used was the blocked deposit! Such was apparently the case in Austria (II), Greece, and one or two other countries. Many governments for social reasons were reluctant to raise interest rates. Higher rates would have had a disturbing influence on house building and on rents of new houses,[22] and would have yielded higher incomes to the rentier class. Debt management considerations, as in this country, sometimes were successful in preventing upward movements in the interest rate structure.

V. Conclusion: Monetary Reforms and Orthodox Measures

The excessive volume of liquid assets in Europe apparently exerted its effects in at least two ways: (1) It increased private spendings out of disposable incomes, and (2) it weakened work incentives. In many of these countries the first phenomenon appears to have largely overshadowed the second. In others, the second phenomenon was particularly potent. Such nonuniformity in the liquidity effect was, to a large extent, due to differences in the volume of excess liquidity existing in these countries. As individuals gained excess liquidity, it is quite likely that their attention was first directed to the possibility of increasing their spending and not to the possibility of reducing their working hours. However, as excess liquidity continued to grow, attention was turned more and more to the second possibility. Some individuals worked fewer hours per day, or fewer days per week, but for many there was little leeway to adjust these hours. The relevant decision, in many cases, was whether to continue work or to quit work altogether, and such a decision was a major one. Therefore, only when excess liquidity had reached very large proportions did a significant segment of the labor force voluntarily give up work for a time to live off accumulated assets. On the other hand, spending probably grew continuously as liquidity grew, even though the total liquidity effect on spending might have been weak.

Thus, the results of the monetary reforms were almost bound to be

[22] See, B. Ohlin, *The Problem of Employment Stabilization* (New York, 1949), p. 23.

more dramatic in some countries than in others, aside from differences in the administrative efficiency and vigor with which the reforms were carried out. For many countries, the most that could be hoped for was some slackening in the rate of spending once excess liquidity had been removed. In those cases in which the liquidity effect on spending proved to be slight, the monetary reform was not a potent anti-inflationary weapon. Moreover, even where this effect might have been potentially large, in practice, as we have seen, various defects in the reforms themselves weakened their impact on spending. On the other hand, in those few countries where excess liquidity had grown so large as to affect seriously work incentives as well as spending, the reforms appear to have been highly successful in spite of several of the same types of defects which were found in less successful reforms. While these defects frequently weakened the liquidity effect on spending, they probably seldom weakened this effect on work incentives. For example, temporary blocking might not have altered significantly the spending habits of individuals who were currently working, but it undoubtedly induced the majority of the voluntarily idle to return to work. Thus, where the monetary reform was least needed it had to be highly efficient to be at all effective, and where it was most needed it could suffer certain defects and still succeed admirably.

Would it have been possible for many of these countries, from the standpoint of inflation control, to have dispensed with the monetary reform altogether? That is, aside from administrative and similar considerations, would it not have been possible for these countries to have dampened inflationary forces with higher income taxes and tighter credit controls, without the utilization of the monetary reform at all? While no general answer to this question is possible, one suspects that in several countries the reforms would have been of no great value as anti-inflationary measures, even if they had been carried out with the highest efficiency. For example, in Finland the inflation was largely due to a heavy rate of investment spending which set off a price-wage spiral. Investment spending was heavy because of refugee reallocation problems, the reconstruction of Northern Finland, and the necessity of building new industries to meet reparation demands from the USSR. In the face of this situation, the 1945 monetary reform, which reduced the volume of banknotes in circulation, was a straw in the wind. The introduction of monetary reforms in such cases was due either to factors that had little direct connection with inflation control—such as taking inventory of banknotes still within the country—or to a misplaced emphasis on quantity theorizing which led many authorities to focus their attention on "stocks" to the neglect of flow magnitudes.

But in many countries the reform, or something similar to it, was probably an essential part of any over-all program to control inflation. This was obviously true in such countries as West and East Germany and Austria where excess liquidity had largely destroyed work incentives. But the case for the monetary reform was almost as compelling in the other countries. Consider the alternative measures faced by the authorities in these countries. So far as income taxation was concerned, the impact of excess liquidity on spending meant that, with a given rate of government expenditures, tax receipts had to comprise a larger proportion of national income than they otherwise would if inflation were to be avoided. But since excess liquidity also made individuals less dependent on their current incomes for current expenditures, a given ratio of tax receipts to national income was more likely to kill incentives toward work than if excess liquidity had not been present. Thus, the existence of this liquidity created a dilemma for the authorities in a number of European countries. An excessive volume of liquid assets necessitated an increase in tax rates and at the same time made it especially dangerous, from the standpoint of incentives, to maintain the existing level of rates.

Central bank measures were also probably weak in a number of countries in which liquid holdings were excessive. The presence of these holdings undoubtedly made some families and business firms less dependent on bank loans as supplements to their current incomes, and hence less sensitive to changes in interest rates and in the tightness of the money markets. Furthermore, orthodox monetary policy was not capable of significantly altering the total supply of liquid assets, even though it was capable of altering the composition of that supply. In some countries, excessive liquidity created too many "self-sufficient islands" within the economy for the successful pursuit of conventional monetary measures.

The authorities in some countries also felt that, in the presence of a large stock of liquid assets, the continuance of direct controls over prices and wages—that is, the continuance of the disequilibrium system—would be futile. In many areas of Europe, the termination of fighting brought with it not only a decreased desire to obey regulations but also widespread anticipations of rising prices as part of a postwar inflation. In addition, large segments of the population had little desire to go on accumulating claims to output in the face of an already abundant supply of these claims. Even if work incentives had not been seriously impaired at the time, there was always the danger that the continuance of the disequilibrium system would ultimately lead to a general deterioration of these incentives. The West German case is, of

THE INTERNATIONAL TRADE PHILOSOPHY OF CORDELL HULL, 1907-1933

By WILLIAM R. ALLEN*

"We urgently need more economics and less selfishness and politics in dealing with tariffs." Cordell Hull, *Congressional Record,* April 14, 1926, p. 7472.

It is a commonplace that economists generally, and perhaps international trade theorists more than most, have not been permitted to make their maximum potential contribution to the formulation of public policy. Typically, men slightly versed in economic principles and little inclined to consult the academic specialist have framed our commercial policies. In light of the divarication in this field between the policy-maker and the economist, it is rather curious and certainly unfortunate that very limited study has been devoted to tariff debates.[1] Economic analysis usually has been conspicuous by its absence or perversion in the determination of American tariff policy; and economists have been disinclined to concern themselves with the problems either of how best to disseminate their reasoning and conclusions among legislators and the community or of the consequences of the imperfect mobility of their ideas.[2] In any case, whether the economist should strive generally for a more active rôle in formulating policy or be content with a passive, spectatorial mission of detached analysis, it behooves him not to abandon entirely the study of legislative deliberations and processes to the political scientist, the historian, and the psychologist.

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[1] One exception is the survey of the 1929-30 debates by F. W. Fetter, "Congressional Tariff Theory," *Am. Econ. Rev.* (Sept. 1933) XXIII, 413-27. An analysis of the congressional committee hearings on the Hawley-Smoot bill is given by E. E. Schattschneider, *Politics, Pressures and the Tariff* (New York, 1935).

[2] Naturally, this is not to suggest that the point of view and the pressures affecting the mode of analysis are, or should be, identical for both the policy-maker and the academic economist. See Jacob Viner, "The Short View and the Long in Economic Policy," *Am. Econ. Rev.* (March 1940) XXX, 1 ff. Fetter (*op. cit.*, p. 427) appears too sanguine in discounting the low quality of congressional debates as being merely a reflection of the public's ignorance and nationalistic inclinations. This is not the place to discuss the implications in political theory of this interpretation. But for purposes of economic analysis, we should do well to heed Viner's admonition against concluding that, because the theories of a period can be *explained* in light of the circumstances then prevailing, the theories (and congressional debates) can also be *justified* by appeal to these special circumstances. Jacob Viner, *Studies in the Theory of International Trade* (New York, 1937), pp. 110-11.

This article is concerned with the views on foreign trade of Cordell Hull during his years in Congress.[3] Hull's unusual interest and competence in the field of international economics made it possible for him to be "both the spearhead of the movement towards a more liberal policy for the United States and a substantial part of its driving force."[4] Thus, the history of the Trade Agreements Program, which has furnished the core of United States economic foreign policy since 1934, would be inadequately told without consideration of the long-held views of the statesman from Tennessee.

A review of the early international trade views of Hull may be considered a case study of congressional trade theory. As such, the speeches and statements of Hull are both good and bad: good because they were given over a period of more than a quarter of a century and were the product of a consistent, intelligent and conscientious public servant; bad because, by his virtues, he was rather an atypical congressman. Hull's theorizing, for all of its lack of sophistication as measured by the standards of the professional economist, was considerably higher in quality than that of almost all his colleagues.

To Hull the commercial aspects of foreign policy were always of paramount importance. He traces his interest in the tariff and other problems of trade to his first excursion into politics when, at the age of sixteen, he participated in the Cleveland-Harrison campaign of 1888.[5] In his first year in Congress, he decided to specialize in "revenue, tariff, and other forms of taxation, economics, and finance."[6] The basic elements of his thought were held consistently throughout his career, and it needs only to be mentioned that his approach to trade policy enlarged during the first World War from considering the subject as just a domestic issue to viewing it also as a key to the problems of international welfare and peace.[7]

I. *The Gains From Trade*

Nature and Purpose of International Trade. To the economist, international trade theory centers around two points: the reason for and the

[3] Hull had a long and significant career in Congress. He held a seat in the House of Representatives from 1907-30, except for the years 1921-23, and was elected to the Senate in 1930, resigning from the upper house in 1933 to become Secretary of State. From 1921-24, he acted as chairman of the Democratic National Committee. He was Secretary of State for almost twelve years—longer than any other man has held the position.

[4] H. J. Tasca, *The Reciprocal Trade Policy of the United States* (Philadephia, 1938), p. 82. Tasca presents a brief summary of Hull's trade philosophy (pp. 82-85).

[5] *The Memoirs of Cordell Hull* (New York, 1948), Vol. I, p. 21.

[6] *Ibid.*, p. 46.

[7] *Ibid.*, pp. 81, 84, 100-01, 352, 363-64. See also H. B. Hinton, *Cordell Hull: A Biography* (New York, 1942), pp. 148, 159, 163.

essential basis of trade (emphasized in the Heckscher-Ohlin approach); and, given these conditions of trade, the distribution of specialization and the direction of trade, and the gains from such specialization and exchange (still largely associated with the orthodox Ricardo-Mill-Marshall-Taussig line of thought). Except for the question of the gains from trade, Hull largely ignored these topics, and the gains which he discussed generally were not those stressed in economic theory.

He did not attempt a formal statement of the comparative cost principle. While he paid considerable attention to the interdependence of imports and exports, he did so in connection with specific problems of trade policy and in reference to the *mechanism* of trade, not in regard to its basic nature and purpose. "Foreign trade," he said, "is really the mutually profitable exchange by nations of their surpluses."[8]

> International trade is simply a system of barter or exchange of goods and products between nations. Each nation must sell its surpluses to other nations needing or desiring them, while in turn it purchases from others such goods and commodities as it may specially desire, chiefly those it does not itself produce at all, or in sufficient quantities, or the production of which is not economically justifiable.[9]

Generally, Hull was much more impressed with the advantages of disposing of surpluses than with those of obtaining imports. The chief gain which did accrue from imports was lower production costs because of cheaper raw materials. Lower costs not only would allow cheaper prices for the benefit of the consumer but also would enable the producer to compete in the markets of the world, which, in turn, would both raise the general level of economic activity and contribute to the community's welfare.[10] But he emphasized that international trade "does not mean the displacement of established home production and trade of one country by that of another." On the one hand, imports are largely noncompetitive, being either raw materials not domestically

[8] *Congressional Record*, Apr. 14, 1926, p. 7472.

[9] *Ibid.*, May 10, 1926, p. 9103; see also *ibid.*, Dec. 22, 1920, p. 634; Department of State *Press Releases*, June 17, 1933, pp. 448-49. (On this point, as on many others in the remainder of the paper, the author is prepared to furnish extensive documentation. Limitations of space make necessary only sample citations.) These statements are rather intriguing in their similarity to classical dicta. See Viner, *Studies*, ch. 8, 9. Note particularly J. S. Mill's criticism (*Principles of Political Economy*, W. J. Ashley, ed., pp. 578-80) of Adam Smith's declaration (*Wealth of Nations*, Modern Library ed., p. 415) that one of the major advantages of trade is that "it carries out that surplus part of the produce of their land and labor for which there is no demand among them, and brings back in return for it something else for which there is a demand."

[10] *Cong. Rec.*, June 9, 1911, p. 1816; *ibid.*, Dec. 19, 1925, pp. 1182, 1184; *New York Times*, June 24, 1929, 10:2. In 1923, he repeatedly urged a reduction in the sugar tariff for the benefit of consumers. *Ibid.*, March 24, 1923, 1:3.

available or semimanufactured and finished articles which cannot be profitably produced at home in sufficient quantities. On the other hand, disposal of exports generally involves the locating and developing of new customers and new markets for surplus production.[11]

Employment Effects: The Disposal of Surpluses. The point which Hull stressed probably more than any other after the war was the necessity of selling surpluses abroad. In 1919 he stated that "the biggest factor in our domestic prosperity during the coming years will be our foreign trade,"[12] and the export of "these ever-increasing surpluses" was the essence of the foreign trade problem.[13] The United States, so his argument ran, is the world's greatest producer. Indeed, we produce vastly more of many commodities than we can consume—the capacity to consume evidently being an absolute quantum, unaffected by possible alternative prices or income levels. Since, with reasonably full employment, we produce large surpluses, exports are essential, although the inflated export values of the war period would naturally decline somewhat. Our economy *must* enjoy substantial exports, or there would inevitably result permanent unemployment and stagnation, only partially relieved by "dumping" abroad.[14] The moral was clear, assuming that we did not wish to curb the development of our productive potential: we must vigorously promote our export trade, in which policy "super-protection" could be nothing but an anomaly.[15] "Our chief expansion must be beyond the seas."[16]

With his strong conviction that there is a significant causal relation running from trade policy to the level of economic activity, it was perhaps inevitable that Hull would claim that "every important panic since the Civil War has occurred either under Republican high-tariff admin-

[11] *Cong. Rec.*, Dec. 19, 1925, p. 1182; *ibid.*, May 13, 1929, p. 1208.

[12] *Ibid.*, Dec. 9, 1919, p. 8744; see also *ibid.*, Apr. 14, 1926, p. 7472.

[13] *N.Y. Times*, Nov. 18, 1925, 25:1; *Cong. Rec.*, Jan. 3, 1929, pp. 1071, 1072.

[14] While an artificial curtailment of trade results in losses because of misallocation of resources, it does not necessarily involve losses through unemployment; and thus, as mentioned earlier (see note 9), Hull repeats an error of Smith and as well deserves the censure of Mill. It is not here implied that Mill's analysis, which assumed perfect mobility of resources and was in the tradition of Say's Law, is adequate. Nevertheless, it is not essential—as Hull declared—to rely upon trade policy to maintain high national income. It should be added that Hull did not speak in terms of an export *balance*, and in the 1930's he denied any motive to promote such a balance. Quite the contrary, he recognized that exports must sooner or later be matched by imports and vigorously condemned beggar-thy-neighbor policies. Thus, while his analysis implies perfect immobility of resources now in export industries, he evinced little concern over the possibility that immobile factors in nonexport industries might be embarrassed by increased imports.

[15] *Cong. Rec.*, Feb. 21, 1919, pp. 3955-56; *ibid.*, Mar. 11, 1924, p. 3948; *Press Releases*, May 6, 1933, pp. 312-13, 313-14, 315.

[16] *Cong. Rec.*, Feb. 21, 1926, p. 7472.

istrations or their high-tariff legislation."[17] The Great Depression, following a period of boom which was not the result of high tariffs, was no exception. The "half-insane policy of economic isolation during the past ten years by America and the world under American leadership is the largest single underlying cause of the present American and world panic. . . ."[18] Almost every nation, in the interests of self-sufficiency, sought at once to stimulate production and to curtail trade, with the inevitable result of unsold surpluses, a disrupted commercial system, and disjointed economies.[19] A necessary, although not a sufficient, condition for the restoration of prosperity—in addition to "indispensable and all-important" domestic programs—was the opening of the markets of the world to the natural flow of surplus commodities.[20] At the London Economic Conference, the Secretary of State emphasized that an effective policy to this end must, in some form, be multilateral:

> . . . nations are substantially interrelated and interdependent in an economic sense with the result that international cooperation is a fundamental necessity. . . . Many measures indispensable to full and satisfactory business recovery are beyond the powers of individual states. . . . It is equally true that mutually profitable markets could only be obtained by the liberalization of the commercial policies of other countries and this is only possible by the simultaneous action of all governments stabilizing exchange and currencies and reducing to a reasonable extent trade barriers and other impediments to commerce between nations.[21]

Political Stability and Peace. After becoming Secretary of State, Hull put much emphasis on the economic foundations of political relations. He did not stress this consideration during his years in Congress,[22] although several times he indicated his belief that the major causes of war are economic in nature.[23] And in 1929 he prophetically warned: "Economic questions more than all others will engross the attention of

[17] *Ibid.*, Feb. 21, 1926, p. 7472.

[18] *Ibid.*, Mar. 24, 1932, p. 6788. "Had international trade, unfettered by universal tariff barriers, been permitted to increase according to the pre-war ratio, the many millions of unemployed wage earners in this and other countries would today be employed at full time." *N.Y. Times*, Feb. 16, 1931, 20:1.

[19] *Cong. Rec.*, May 13, 1929, pp. 1205-1206; *N.Y. Times*, Sept. 27, 1931, 2:4; *Press Releases*, Apr. 29, 1933, p. 287.

[20] *N.Y. Times*, June 2, 1931, 27:1; *Press Releases*, Dec. 16, 1933, p. 342.

[21] *Foreign Relations of the United States* (Washington, 1950), 1933, Vol. I, pp. 638-39. And at the Montevideo Conference, *Press Releases*, Dec. 16, 1933, pp. 342-43.

[22] Hull's own account of his intellectual development (see citation in note 7) indicates a greater concern in the political implications of foreign economic relations than is evidenced in his congressional addresses and statements.

[23] *Cong. Rec.*, Dec. 9, 1919, p. 8743; *ibid.*, Mar. 24, 1932, p. 6793.

this country and the world for many years to come."[24] It was essential, therefore, in a world of growing economic interdependence, to achieve such reforms in commercial practices as would eliminate many of the causes of political conflict.[25]

A condition of general depression tended to increase the intensity of economic fears and rivalries. The chaotic economic situation of the early 1930's was, Hull felt, largely responsible for social unrest, degeneration of "international ethics," and the threat of eventual military conflict.[26]

Opportunities for Leadership. Throughout the period from the end of the first World War to the depression, Congressman Hull urged that America, in the face of new global economic conditions, should adopt a liberal commercial policy. The war had wrought both physical and financial changes: the immediate productive power of Europe had been reduced and disorganized while that of the United States had greatly expanded—raising the problem of "surplus" production here; the United States had been transformed from a debtor to a creditor; our share of the world's gold and of world trade was greater than before the war; whereas foreign trade generally was demoralized, we had experienced a trade boom during and just after the war, with the value of foreign trade becoming a much larger percentage of domestic production than in previous years. In short, the United States had been thrust into the "dominant position in the financial and commercial affairs of the world."[27] Hull continued in the late 'twenties to insist that this country possessed extraordinary trade opportunities which should be eagerly exploited.[28]

Shortly after the elections of 1920, he observed that the United States faced the "momentous question" of whether it would adopt the "wise and philosophic policy" of maintaining "our present supreme position in world finance, commerce, and industry," through a liberal and

[24] *Ibid.*, May 13, 1929, p. 1203.

[25] "Economic peace offers the greatest assurance of permanent world peace. Artificial trade barriers invariably create bitter trade rivalry, vicious trade practices, and economic wars, which in modern times have been the prelude to actual wars. Commercial power or control means political control and often military control as well. It becomes all important, therefore, to reduce to a minimum those trade discriminations, obstructions, and monopoly combinations, which breed serious antagonisms and strife in the efforts by nations to extend their commercial interests." *Ibid.*, Dec. 19, 1925, p. 1184; see also *ibid.*, Feb. 26, 1915, pp. 4766, 4768; *N.Y. Times*, July 25, 1931, 1:7.

[26] *N.Y. Times*, Sept. 27, 1931, 2:4; *Press Releases*, Apr. 29, 1933, pp. 297-99.

[27] *Cong. Rec.*, Dec. 22, 1920, pp. 631, 632, 635; *ibid.*, Mar. 11, 1924, p. 3947. Even before the war, Hull chided his high-tariff opponents for their lack of confidence in the ability of the American producer to compete in world markets. *Ibid.*, June 11, 1911, p. 1817.

[28] *Ibid.*, Apr. 14, 1926, pp. 7473, 7475.

vigorous commercial policy,[29] or whether it would "as the only alternative adopt the narrow, short-sighted, suicidal policy of commercial isolation."[30] But proper trade policy was much more than a purely domestic issue. He correctly observed in 1919 that conditions then prevailing would lead naturally to a readjustment of tariffs and of commercial relations, which would "offer a strong incentive to the renewal of tariff wars." It was thus of paramount importance to secure the general adoption of "certain prohibitions by which both individuals and nations shall be governed in their international financial and commercial activities, thereby eliminating . . . unfair, hurtful, and trouble-making practices and methods. . . ."[31] He considered the immediate postwar period a most propitious time to call an international trade conference, leading perhaps to a permanent trade-agreement congress or an arbitration tribunal, to establish "a code of commercial ethics," and he deplored the failure of the Paris Peace Conference to achieve an international agreement to abandon the more vicious trade practices.[32]

[29] One of the elements of such a policy would be "negotiating wise reciprocal commerical treaties."

[30] *Ibid.*, Dec. 22, 1920, pp. 634-35.

[31] *Ibid.*, Feb. 21, 1919, pp. 3956-57.

[32] *Ibid.*, Feb. 21, 1919, pp. 3955, 3956, 3960; *ibid.*, Dec. 9, 1919, p. 8743. In February 1916, Hull had prepared a resolution, which in modified form was introduced in the House in April 1917, calling for a trade conference at the end of the war. In 1916, Hull submitted a copy of his resolution to Secretary of State Robert Lansing and asked for the latter's view of the wisdom of offering the resolution in Congress at that time. Hull said he had "in mind the generally accepted fact that the chief underlying cause of the present European war is accounted for in the strenuous trade conquests and bitter trade rivalry being conducted prior to the outbreak of the war. . . ." Also, largely for the sake of its own commercial welfare, it was "very important and necessary" for the United States to forestall the formation of economic unions by either the Allies or the Central Powers to conduct economic warfare after the military armistice. National Archives, State Decimal File 1910-29, 600.0031/2, letter from Hull to Lansing, Feb. 16, 1916. It was the opinion of C. A. Holder, Foreign Trade Adviser in the State Department, that "unquestionably both the allied and central powers would resent bitterly any such proposal made at this time or even made after the war." During the war, it was "absolutely impossible . . . to discuss such a question." "After the war undoubtedly groups . . . will continue to wage economic war on each other unless the decision is so decisive that the loser will be unable to resist the dictation of the winner. In any event the victorious side would not welcome our interference nor if the war should become a draw would our suggestions be welcomed as economic conditions in both groups will be so radically different from ours that the measures they may have to take to regain a part of their commerce will not be at all similar to measures that we have taken or will take in the future." *Ibid.*, memorandum from Holder to F. C. Polk, Counselor, Feb. 19, 1916. Lansing replied to Hull that the opinion of the Department was that "such a proposal would undoubtedly prove unacceptable to the belligerent powers at this time. . . ." *Ibid.*, "personal and confidential" letter from Lansing to Hull, Apr. 1, 1916. In later years, Hull continued to advocate international conferences on commercial relations. *N.Y. Times*, Jan. 6, 1922, 2:4; National Archives, State Decimal File 1910-29, 550.M1/68, memorandum by Wallace McClure of conversation with Hull, Feb. 8, 1927; *Cong. Rec.*, May 19, 1932, pp. 10638-39.

But the United States persisted in its refusal to recognize that "we are in a new era, which calls for new policies." Far from assuming leadership in liberal and friendly commercial policies, we were, Hull insisted, largely responsible for the widespread growth of extreme trade barriers.[33] To the end of his career in Congress, and after, he pleaded for a change in the direction of American leadership, which, "while disclaiming economic internationalism, would challenge economic nationalism and pursue a sane, liberal, middle course. . . ."[34]

II. *The Losses From Protection*

The evils and dangers of a policy of protection were described at considerable length by Hull, frequently in a scathing and indignant manner.[35]

Inequality of Tariff. He considered it perfectly self-evident that the protective tariff was an unwise and unfair tax. Without attempting rigorously to trace the income-distribution effects of the tariff, he often charged that the duties benefited only favored and greedy manufacturers by raising prices, thus extorting from the great mass of consumers a subsidy for the wealthy few.

> . . . our system of high protective-tariff taxation is an outrage in its operation and effects. It is conceived upon the idea that the people should be taxed according to their needs and practically according to their poverty.
>
> A protective tariff, speaking generally, is immoral and dishonest, because its sole purpose is to increase prices artificially, in certain instances, thereby enabling one citizen to levy unjust tribute from another.[36]

Inefficiency and High Costs. The basic economic purpose of international trade is to make possible a more efficient allocation of resources within the respective national units of the world economy than would be feasible or possible if each unit were forced to be self-sufficient. Unfortunately (from the economist's viewpoint), Hull did not pursue this analysis, aside from criticizing tariffs on the ground that they raised

[33] *Cong. Rec.*, Dec. 22, 1920, pp. 632, 633; *N.Y. Times*, Mar. 1, 1926, 10:1; *Cong. Rec.*, Apr. 8, 1932, pp. 7746-47.

[34] *Ibid.*, Dec. 19, 1925, p. 1182; *ibid.*, Jan. 3, 1929, p. 1072; Department of State Files, 550.S1 Wash./48, Apr. 8, 1933.

[35] He castigated the Payne-Aldrich Act of 1909 as "that abominable iniquity, that ghastly abortion." *Cong. Rec.*, Sept. 25, 1914, p. 15721. Other descriptions of the protective system included: "the sleepless monster of protection . . . vicious class legislation" (*ibid.*, June 9, 1911, p. 1812); "the personification of avarice and selfishness," "this system of diabolical extortion" (*ibid.*, Mar. 16, 1912, pp. 3498, 3501).

[36] Respectively, *ibid.*, Mar. 16, 1912, p. 3498; *ibid.*, Feb. 26, 1923, p. 4670. See also *ibid.*, Mar. 18, 1908, p. 3519; *ibid.*, May 13, 1929, pp. 1203, 1209.

production costs, the major consequence of which was the handicapping of our efficient export trade.[37]

He further complained that American tariffs had been framed "not only to protect the weakest and most inefficient industry . . . , but the most inefficient individual business in that industry. They are framed to protect overcapitalization, water capital, inefficient management, obsolete and antiquated machinery and plants, and also to protect against freight rates across our 3000-mile continent."[38] Moreover, under the protection of barriers which prevented "reasonable competition," many manufacturers had been "lulled into inefficiency."[39] There was thus a reciprocal relationship: inefficient industries obtained tariffs, and tariffs begat inefficiency.

Fostering of Monopoly. In the Roosevelt-Taft "trust-busting" period, Hull charged that the protective tariff, a product of Republican administrations, had been responsible for monopolies and trusts "springing up like mushrooms." Favored interests were allowed "free rein to their unbridled appetite for gain and their wicked lust for power."[40] In late 1920, he made the pertinent observation that those congressmen who were most insistent on relaxing governmental restrictions on business were the ones who also were rabidly advocating the "artificial economic barrier" of a protective tariff.[41] For Hull, the ideal of a competitive economic order embraced the ideal of a "competitive" tariff.

Labor and the Tariff. Hull effectively attacked the popular pauper-labor argument "that American manufacturers must have these extortionate tariffs in order to protect reasonable wage scales."[42] First, he maintained that, historically, the high postwar tariffs had not been the cause either of the welfare of labor specifically or of prosperity generally. High wages, high living standards, and shorter working hours "had become a permanent part of our industrial system prior to the Fordney tariff" of 1922—and they originally appeared in non-tariff-sheltered industries. The "partially satisfactory business conditions" of the 'twenties resulted, not from the tariff, but from our great resources, mass production and increased productivity, varied capital expansion, the credit structure, and installment sales.[43]

[37] See p. 103, above.

[38] *Ibid.*, May 13, 1929, p. 1205; see also *ibid.*, Dec. 19, 1925, p. 1183; *N.Y. Times*, Feb. 16, 1931, 20:1.

[39] *Cong. Rec.*, Dec. 19, 1925, p. 1183.

[40] *Ibid.*, Mar. 18, 1908, p. 3519; *ibid.*, Mar. 29, 1909, p. 532; *ibid.*, Aug. 13, 1912, p. 10835. See also *ibid.*, May 13, 1929, p. 1208.

[41] *Ibid.*, Dec. 22, 1920, pp. 632-33.

[42] *Ibid.*, Dec. 19, 1925, p. 1183.

[43] *Ibid.*, Jan. 3, 1929, p. 1072.

Second, only a small proportion of the wage earners "are in a position to receive any increased wage benefits from tariffs, even theoretically."[44] Third, for the most part, wages were lower and working conditions poorer in the highly protected industries than in the unsheltered segments of the economy.[45] Similarly, although the United States had enjoyed high wages under protection, many high tariff countries had much lower living standards than had free-trade England.[46] Finally, Hull indicated a respectable comprehension of "efficiency wages."

> The increase of productivity, or the output per man, is the outstanding factor in our high wages and high living standards. . . . There is always a close relation between the productivity of labor and the wages paid. A low wage naturally goes with low industrial efficiency, and generally means a high labor cost.[47]

Although he did not state with precision the relation of the limit of international wage-rate ratios to productivity ratios, he called attention to the fact, in 1920, that the United States was exporting goods and services valued at eight billion dollars "in utter defiance of the competition" of pauper labor.[48]

Agriculture and the Tariff. Protectionists claimed that farmers, like laborers, were major beneficiaries of the tariff, while in fact, Hull insisted, the only ones who had become wealthy as a result of protection were a few manufacturers. Agriculture had been deluded by industry into supporting a high-tariff policy, and unless it soon understood that its best interests lay in the opposite direction, it was destined to a state of permanent decay.[49] The agricultural depression of the 'twenties could be "immediately and effectively" relieved by reducing tariffs and freeing international trade.[50]

American agriculture was so efficient, Hull's analysis ran, that it not only produced more of many commodities than could be sold in the home market, but it exported a great deal—and needed to export much more. Where exports were a large proportion of total production, agri-

[44] *Ibid.*, May 13, 1929, p. 1206. Hull gave several estimates of this proportion, but he indicated that of the 40-45 million gainfully employed in the late 'twenties, about 6 million were in "tariff-sheltered industries." *Ibid.*, Apr. 14, 1926, p. 7475; *ibid.*, May 13, 1929, pp. 1206-07. But in 1932, he apparently thought that only 15-20 percent of the 8½ million wage earners in manufacturing could hope for tariff benefits. *Ibid.*, Apr. 8, 1932, p. 7746.

[45] *Ibid.*, Mar. 11, 1924, p. 3948; *ibid.*, Feb. 15, 1927, p. 3898.

[46] *Ibid.*, Apr. 14, 1926, p. 7475; *ibid.*, May 13, 1929, p. 1208.

[47] *Ibid.*, May 13, 1929, pp. 1207-08; see also Apr. 8, 1932, p. 7746.

[48] *Ibid.*, Dec. 22, 1920, p. 636.

[49] *Ibid.*, Apr. 14, 1926, pp. 7472, 7478; *ibid.*, May 10, 1926, pp. 9099-01, 9102, 9103; *ibid.*, May 24, 1932, p. 10998.

[50] *N.Y. Times*, Sept. 24, 1923, 4:2.

cultural or otherwise, the world price tended to prevail also in the domestic market. Generally, the American farmer already had the home market, and keeping out driblets of competitive imports could have no appreciable effect on either the prices or the income received by agriculture. The only possible results to the farmer of a high tariff policy would be an artificial raising of the prices of things he bought—thus creating a price disparity, with the farmer selling in a "free" market and buying in a protected one—and a curtailment of exports generally, including farm products.[51]

III. *The Interdependence of Imports and Exports*

Must Import to Export. While, to Hull, the chief advantage of international trade was the disposal of surpluses, he realized generally that foreign sales are limited by imports of some sort. Gold flows and loans were factors in determining the level of balance in the international payments, but he appreciated the fact that one-way movements of gold and loans could not be expected to continue indefinitely.[52] Basically, "for every dollar of merchandise exported there must sooner or later be a dollar of the same imported."[53]

United States Loaning Policy. Hull naturally felt a certain ambivalence toward the great flow of American loans abroad which continued throughout the 'twenties. For while the billions of dollar exchange thus advanced to foreigners made possible the all-important disposal of our surpluses, it seemed to him apparent that "merely piling new upon old debts" was not an acceptable foundation for a long-run commercial policy.[54] Precisely what his objections were to "excessive" foreign loans, he did not make clear, although his language suggested that this stimulus to export trade was "artificial," inadequate, and unsafe. Also, "the more we loan the more must be paid back with interest by some means."[55]

Receiving Payment of Foreign Debts. Hull ridiculed the attitude that the United States should both insist on foreign nations repaying loans and at the same time restrict imports, but he criticized those who

[51] *Cong. Rec.*, Dec. 22, 1920, pp. 633, 636-37; *ibid.*, Feb. 26, 1923, pp. 4671, 4668-70; *ibid.*, May 10, 1926, pp. 9098-99, 9101, 9102-04.

[52] "Save for these factors [foreign loans and receiving gold] our foreign commerce would present a deplorable situation today. We cannot continue indefinitely to pile up great menacing surpluses of idle gold, any more than we can continue to finance a large portion of our exports by huge foreign loans." *N.Y. Times*, Nov. 18, 1925, 25:1.

[53] *Cong. Rec.*, May 13, 1929, pp. 1208-09; see also *ibid.*, Dec. 22, 1920, pp. 632, 634; *Press Releases*, May 6, 1933, p. 314.

[54] *N.Y. Times*, Nov. 18, 1925, 25:1; *Cong. Rec.*, Jan. 3, 1929, p. 1073.

[55] *Ibid.*, Apr. 14, 1926, p. 7473.

proposed that we cancel, in whole or in part, foreign indebtedness only for the purpose of obviating the necessity of increasing our imports.[56] He understood that receiving debt payments would, indeed, necessitate large imports (although he did not speak of an import balance), and that our high tariff policy had seriously hampered the repayment process, but the appropriate policy was to liberalize trade and accept the imports, not to ignore the foreign obligations.[57] Even in the midst of the depression, Hull held that there was no compelling reason to write off any of the foreign debts, although leniency should be shown to the debtors. "Of what avail would it be to sidetrack the war debts upon the theory of increasing international trade, while leaving intact the insurmountable tariff and other trade and finance obstructions that bristle on every national frontier and render trade virtually as impossible without war debts as with them?"[58]

IV. *Tariff Criteria and Purposes*

Equalization of Production Costs. Hull recalled that in earlier years, particularly until the middle of the nineteenth century, advocates of high tariffs had based their argument largely on the protection of infant industries.[59] He considered the core of the protectionist theory from then until after 1900 to be safeguarding American labor from cheap foreign competition. But the theory was modified again, with the supposedly ideal tariff now to equalize foreign and domestic costs of production—"plus a reasonable profit for the domestic producer."[60] The cost criterion was scarcely as acceptable as the others. It was an "exploded and repudiated economic fallacy," it was "discredited by the best economic thought," and it was too "vague" to serve as a formula.[61]

[56] *Ibid.*, Dec. 22, 1920, pp. 631, 634; *ibid.*, Dec. 19, 1925, p. 1183.

[57] *Cong. Rec.*, Dec. 22, 1920, pp. 631, 634, 635; *N.Y. Times*, May 7, 1922, VII, 3:1; *Cong. Rec.*, Feb. 15, 1927, p. 3898.

[58] *Cong. Rec.*, Dec. 6, 1932, p. 65; see also *Press Releases*, May 6, 1933, p. 312.

[59] Around the turn of the century, when Hull first entered Congress, the two major arguments of protectionists were the pauper labor argument and the infant industry argument. The former remained popular all through—and beyond—the period of Hull's congressional career. But, except for some discussion in the 1921-22 debates concerning the "war babies," the infant industry argument was of very little significance in the postwar debates.

[60] *Cong. Rec.*, Dec. 22, 1920, p. 635. The cost-equalization criterion was mentioned in congressional tariff debates of the 1890's; it was first presented in a party platform by the Republicans in 1904; it first played an important rôle in a tariff debate in 1908-09; and it was embodied in the tariff acts of 1922 and 1930. Although not until 1928 did the Democrats espouse the criterion—"the extreme measure of every tariff rate"—in a platform, in fact some supported it as early as 1909. In 1928, the Republicans, keeping one step ahead of their opponents, conceived the "true" principle of protection to be the equalization of "competitive conditions."

[61] *Ibid.*, Aug. 13, 1912, p. 10835; *ibid.*, May 13, 1929, p. 1212.

However, virtually the only concrete objections Hull raised to the principle were administrative, not economic: it was impracticable to ascertain the pertinent costs.

The Competitive Tariff. Over the years, the respective stands of the two major political parties on the tariff gradually changed, with both tending to support higher and higher rates, and with the distinction between the party platforms becoming blurred. However, Hull persisted in trying to make clear "a vast, irreconcilable and well-defined difference in attitude" between the parties on this issue.[62] The Republicans, he said, nominally supporting the cost-equalization formula, were following a policy of extreme nationalism, consisting of a virtual embargo on all imports conceivably competitive.[63]

The Democratic position, as defined by Hull, did not embrace immediate free trade. His complaint against the Republicans was that they advocated, "not moderate protection, not reasonable protection, or sensible or practical protection, but embargo protection."[64] Although he criticized the vagueness of the Republican tariff criterion, he offered no precise formula for the Democrats.[65] Nevertheless, he frequently contended that his party favored a "moderate or competitive tariff for revenue."

The theory of the competitive tariff was not comprehensively elaborated in any single address, but it seemed to include the following elements: the fundamental justification for the tax was to provide government revenue,[66] with little or no regard for protection of domestic industry; while American producers should be able to expect a reasonable

[62] In 1931, a *New York Times* editorial remarked that Hull "is the last survivor of a great party tradition. . . . The party tradition before which he burns the lone lamp of worship is that Democrats have a clearly marked position on the tariff as contrasted with the Republicans." May 17, 1931, III, 1:2.

[63] *Cong. Rec.*, June 9, 1911, p. 1811; *ibid.*, Mar. 2, 1929, p. 5163.

[64] *Ibid.*, May 13, 1929, p. 1204. Even under a tariff bill which he could support, "drastic or abnormal imports against an efficient industry . . . would be safeguarded against" (p. 1208)—which raises the unanswered question of what Hull considered to be an "efficient" industry. See *Press Releases*, May 6, 1933, p. 314: Hull's policy "does not contemplate no tariffs, nor even low tariffs, but a reasonable, moderate, decent level of tariffs, in lieu of existing rank and wild excesses and discriminations."

[65] Indeed, he stated that until "the first long step" had been taken toward a liberalization of commercial policy, the problem of deciding on exact rate formulas was not pressing. Once production costs were lowered and foreign markets enlarged, "tariff demands will be modified, the rate basis will be different and easier of determination." *Cong. Rec.*, Jan. 3, 1929, p. 1073. Later, he added: "Naturally, as domestic industries become self-sustaining, tariffs should be correspondingly reduced, with the view to their ultimate removal, especially when there arises substantial exports and no material competitive imports." *Ibid.*, Mar. 2, 1929, p. 5163.

[66] It was not Hull's desire to put great reliance upon customs receipts to meet the government's needs; he preferred an income tax. Hull was the main architect of the income tax act adopted during the first World War.

profit, they were not warranted in complaining about fair competition; there would be no tariff shelter for monopolies and extortionate price policies; however, no efficient or economically justifiable industry should be endangered by abnormal imports;[67] the free list generally should include essential imports, commodities not produced here, and things which this country mainly exports; maximum rates should be placed on luxuries.[68]

Most-Favored-Nation Principle. After tariff rates were determined, on whatever basis, it was Hull's belief—although not often stated—that they should be generalized under the unconditional most-favored-nation clause. He was unsure of his understanding of the principle in 1919, but thought that it was "generally agreed" that adoption of the clause by all commercial nations "would remove virtually all kinds of discrimination in international trade."[69]

During the early part of his tenure as Secretary of State, Hull reaffirmed his support of the unconditional form of the clause and expressed hope that the United States policy of nondiscrimination and lowered trade barriers would induce other nations to follow a like course. He added that the chaotic economic situation might make necessary qualifications or exceptions to the favored-nation policy, mentioning specifically possible multilateral treaties the benefits of which would not be automatically generalized to nonsignatories who did not subscribe to the policy of the agreement.[70]

[67] "Competitive tariff rates do not contemplate destructive rates where existence of a business is justified economically, but rates competitive and designed to prevent monopoly and to assure reasonable competition in the domestic markets." *Cong. Rec.* Dec. 22, 1920, p. 635. He thought that allowing competitive imports to the extent of five to ten per cent of domestic production would prevent monopoly. *Ibid.*, Apr. 14, 1926, p. 7474.

[68] *Ibid.*, June 9, 1911, pp. 1811, 1812, 1815; *ibid.*, Mar. 11, 1924, p. 3947; *ibid.*, May 13, 1929, pp. 1202, 1208.

[69] *Ibid.*, Feb. 21, 1919, p. 3957. While colonial preferential arrangements were in violation of the most-favored-nation principle, he was reluctant to make a blanket condemnation of them. Nevertheless, in the interests both of commercial nations generally and of the colonies involved, the principle should apply to the fullest extent possible. *Ibid.*, Feb. 21, 1919, p. 3958. In 1916, two subjects he thought should be considered by an international trade conference (see above p. 107 and note 32) were "the permanent preservation of the principle of unconditional most-favored-nation treatment" and "as to colonies and a mother country, to either discontinue, or to adopt a broader and more liberal, operation of preferential tariffs and other kinds of preferential treatment." National Archives, State Decimal File 1910-29, 600.0031/2, letter from Hull to Secretary of State Lansing, Feb. 16, 1916.

[70] Department of State Files, A/LS 611.0031/561, memorandum by Hull of conversation with Minister of the Irish Free State, Sept. 21, 1933; *ibid.*, 611.003/2980, memorandum by Hull of conversation with Minister of Czechoslovakia, Mar. 1, 1934. Such a restricted interpretation of the rule of equality was included in the proposal Hull submitted at the close of the London Economic Conference and also in his resolution adopted by the Montevideo Conference in 1933.

At least as early as January 1929, Hull said that the United States could have utilized, as it could yet, the tariff bargaining method, based on the unconditional most-favored-nation clause, to supplement unilateral action to lower excessive tariffs.[71] And in late 1931, he discussed with the State Department the desirability of legislation authorizing executive reciprocal trade agreements, to be binding unless vetoed by Congress within six months.[72]

V. *Tariff-Making Procedures*

Republicans and the Tariff Interests. Hull astutely pointed out that high-tariff beneficiaries encouraged others also to strive for protection, for while tariffs raised living and production costs for everyone, common strategy "insures wider support for the general scheme."[73] But the protective system could be expanded and perpetuated only through political power, and it was the Republican Party which did the bidding of the tariff interests. Hull bitterly accused Republicans of exchanging tariff benefits for campaign contributions; indeed, this unholy alliance had gone so far that these special groups had become the dominant element of the party.[74] The mechanism by which the tariff beneficiaries virtually wrote their own rates included the lobbying system, which "presents a continuous round of political and legislative debauches with graft aforethought."[75]

Tariff Boards and Commissions. From the foregoing, it might be supposed that Hull would have supported from the beginning the establishment of some kind of tariff commission to make studies of, and formulate recommendations on, commercial policy. However, he strongly opposed the Taft Tariff Board (1909-12). He claimed that the Republicans gave nominal support to the idea of the Board (as to the Tariff Commission of 1882) only for ulterior reasons of political expediency, to avoid immediate lowering of the tariff. An impartial board would recommend tariff reductions, but it was ridiculous to imply that

[71] *Cong. Rec.*, Jan. 3, 1929, p. 1073; see also *N.Y. Times*, May 30, 1931, 1:8.

[72] Department of State Files, A/FU 611.0031/375, communication from Wallace McClure to C. M. Barnes, both of the Treaty Division, concerning a conversation of the former with Hull, Oct. 31, 1931: "He [Hull] seemed to feel strongly that only by executive action without confirmation by Congress could the reduction of the American tariff, which he urgently advocates, be made the instrument of reducing at the same time the tariff of other countries which impede the exportation of American goods."

[73] *Cong. Rec.*, Apr. 14, 1926, p. 7472.

[74] The Republican party was "the pliant tool, the shield bearer, the toady, the lackey, the flunky of protection and the trusts" in "the most corrupt partnership between politics and vested interests in American history." *Ibid.*, June 9, 1911, p. 1812; *ibid.*, Apr. 16, 1929, p. 52.

[75] *Ibid.*, Apr. 14, 1926, p. 7472; see also *ibid.*, May 13, 1929, pp. 1202, 1205.

"only a Tariff Board knows how to subtract." Although Congress could profitably utilize expert assistance, it was more capable than a board to deal with the tariff. Board investigations were too slow, and both political parties were likely to ignore their findings, in any case.[76]

He was more favorably disposed toward the Tariff Commission established in 1916, and in 1920 appealed to the House not to attempt a general tariff revision before the Commission completed a "full investigation of all the essential facts."[77] While he continued to support the idea of an unbiased commission, he deplored the alleged factionalism, partisanship, and subservience to executive pressure of the body under Republican administration.[78]

Conclusion

It would be unfair to make the general condemnation that Hull's conclusions were usually correct—but for the wrong reasons. Nevertheless, deficiencies in his analysis have been apparent. Some matters basic to the theory of international trade were not expounded, and topics included in his discussion usually were incompletely examined. Intuitive conviction and frequent, enthusiastic reiteration generally did duty for rigorous analysis. It is fortunate that his intuition typically was sound.

Hull remained consistent and steadfast not only in Congress, but during his tenure as Secretary of State—and such consistency required no little political courage and moral conviction. Moreover, in their prolific defense of the Trade Agreements Program prior to the second World War, representatives of the State Department followed very closely the views of the Secretary. And in their main outlines, Hull's tariff views when in the cabinet were essentially the same as those he had expounded from the time he entered Congress in 1907. Thus, the ideas on trade and international relations generally which we have reviewed furnished the philosophy of much of America's foreign policy during the New Deal period.

[76] *Ibid.*, July 29, 1911, pp. 3334, 3336-38; *ibid.*, Feb. 26, 1915, p. 4770.

[77] *Ibid.*, Dec. 22, 1920, p. 635.

[78] *Ibid.*, Mar 2, 1926, pp. 4857-58, 4852; *N.Y. Times*, June 2, 1931, 27:1. Also Hull rejected the "flexible" tariff provision under which the President and the Tariff Commission were given legitimate functions of Congress. *Cong. Rec.*, Mar. 2, 1929, p. 5164; *ibid.*, May 19, 1932, pp. 10637-38.

NATIONAL INCOME AND PRODUCT OF THE UNITED STATES, 1929-1950[1]

By L. R. Klein*

The National Bureau of Economic Research in one of its most successful projects gave the United States a national income. The National Bureau's contribution was truly developed and fashioned into a highly refined product by Simon Kuznets. It has been a healthy development to follow up the initial research by transferring the main part of national income measurement from a relatively small, independent organization with limited resources to a government bureau whose comparatively tremendous resources can be mobilized to the continuation of periodic estimates of national income and to the improved precision of the resulting statistical series.

The National Income Division of the Department of Commerce has actually done more than remain as the custodian of our national income. They have introduced numerous modifications and refinements of concepts and techniques. For the first time since Kuznets presented us with the underlying details in his great 2-volume work, *National Income and Its Composition, 1919-1938*,[2] we now have the relevant facts concerning the preparation of current national income data. The statistical series of the National Income Division are now regarded as "official" data and are the most widely used for the period since 1929. For many years, we have been using these data without knowing much about them other than the circulating rumor that they are quite precise. It is our good fortune to have the lucid and frank presentation contained in the volume under review in order that we may all judge this important fund of information with the greatest of care.

The Commerce Department's document presents a review in statistical terms of the growth and fluctuations of the U. S. economy since 1929, the conceptual framework of national income statistics, the sources and methods of estimation, constant dollar estimates of national product, and numerous statistical tables bearing the fruits of the

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[1] *National Income and Product of the United States, 1929-1950*, prepared by the National Income Division, U. S. Department of Commerce, Washington, 1951. Supplement to *Survey of Current Business*. Helpful criticism of this review has been received from S. A. Goldberg, G. Katona, J. N. Morgan and R. A. Musgrave.

[2] Simon Kuznets, *National Income and Its Composition, 1919-1938* (New York, National Bureau of Economic Research, 1941).

labors. The major contributions are the previously mentioned frank statements about the procedures involved and the addition of several new features such as imputed rent, imputed interest, the treatment of government interest as a transfer, the use of retail sales statistics and other data for improved estimates of consumer expenditures, the revaluation of inventories by type of accounting systems used, and the constant dollar estimates of national product. Some of these features were already incorporated in the 1947 revision of the national income data. In addition, the authors provide well-reasoned judgments on the comparative reliability of their various series. They are able to recognize limitations of their results as well as innumerable virtues.

The statistical review of economic developments since 1929 is ably done within the confines of the data contained in the volume at hand. The presentation is weak, however, in failing to take account of the rôle of exports, under the European Recovery Program and also through more traditional channels, in sustaining economic activity in this country since 1948. In restricting themselves to the use of their materials alone, the authors are not able to draw on the existing body of financial, price, wage and other statistics that would enable them to give a more rounded view of the total economy. This part of the volume shows clearly the narrow scope of the aggregative national income statistics.[3]

The most important parts of the volume are, however, those having to do with the conceptual framework, the sources, and the methods of estimation. The conceptual framework conditions the orientation of the program of the National Income Division and consequently has a great bearing on the final results. The concepts are stated clearly and unambiguously. On this account there can be no criticism, but the arbitrary nature of the decisions that have been made becomes obvious. Moreover, the rationalization of several of these decisions is painful to the reader.[4] Many of the rationalizations could have been left unsaid. The important thing is that we be provided with a clear statement of the calculations made. In some cases decisions are admittedly based on long-standing traditions in the field of national income measurement. With these there should be no quarrel as long as the position is openly stated.

[3] In contrast, the diagnosis of economic activity given in the periodic reports of the Council of Economic Advisers is much more comprehensive and points up the need for drawing on numerous statistical sources outside the materials of the National Income Division in order to present an adequate picture of the situation.

[4] In discussing imputed income, the authors say that lodging furnished domestic servants is not imputed because "it is felt that as a general proposition, they do not regard the lodging furnished them as an addition to income." Perhaps repetition of the quoted phrase makes the authors feel better about their decision on imputations. It gives me no comfort.

The premise from which the authors commence their analysis is that the central objective is to measure total output. In making a plea on behalf of many professional economists and statisticians who rely heavily on the data produced by the National Income Division, I would argue that this is not a satisfactory central objective. I would put forth the alternative conceptual framework that the central objective should be to develop a comprehensive and detailed system of social accounts. The comprehensiveness and detail should be as great as quality standards and resources permit. Historically, modern developments have been concerned with the estimation of various aggregates all subsumed under the generic term, national income, but in view of present knowledge do we still want to set out from this starting point? It seems that the requirements of the present are for a set of social accounts from which a variety of problems can be studied, including those for which measures of national income are specifically designed.

There is not, of necessity, a conflict between the construction of particular measures of aggregate output and the broader concept of social accounting. The complaint registered in these pages is simply the impression that aspects of social accounting may have been retarded in development and that the presentation of arguments in *National Income* has been strained by the excessive attention paid to national income totals.

Let us consider, as an example, the treatment of corporate profits in the national income estimates of the present volume. The authors argue that corporate profits, as a component of national income, should be reported before rather than after taxes; hence their national income estimates include corporate profits taxes as a positive component. In order to justify the inclusion they argue that national income should remain invariant under changes in tax structure alone (*e.g.*, a shift from excise to corporate income taxes of equivalent yield), and if corporate profits taxes are not shifted forward, they will obtain the desired invariance by their treatment. By the same line of argument, they point out that indirect business taxes should be excluded from national income if they are wholly shifted forward.

Parenthetically we mention that if the invariance argument is taken to its logical conclusion, a number of new problems are raised in national income estimation. Should the value of national income vary simply because a woman shifts from doing her own housework to doing housework for someone else?[5] Should construction expenditures (not aggregate output) be different if a person makes an addition to his home without a permit instead of with a permit?

[5] Norwegian estimates of national income have been forward-looking in that they have included the value of housewives' services.

The specific treatment of corporate income and indirect business taxes is not necessarily subject to extreme criticism; perhaps the aggregates so defined serve many useful purposes. It is the peculiar rationalization given in the Commerce Department's document that is so annoying. In practical applications there are some situations in which statistics of profits after taxes are urgently needed while other situations call for statistics of profits before taxes. In studying capital formation in the trade cycle we often want to use the former concept, and in studying the ability of corporations to increase wages we often want to use the latter concept. Statistical data are presented in the national accounts of the Department of Commerce in such form that analysts can easily shift from one profit variable to the other; for this reason their present practices unadorned by rationalizations would be acceptable. In the treatment of other items the situation is not as favorable since data are not easily accessible for altering the published concepts. Property taxes on owner-occupied residences cannot, without additional tabulations, be shifted to personal from business taxes. It is not altogether clear that the decision of the National Income Division to regard ownership of residential housing as a business in which one sells services to oneself is useful in business cycle analysis nor should expenditures on new residential construction by owner-occupiers necessarily be regarded as capital formation rather than consumer expenditures. Many students of business cycles have argued that new light may be shed on behavior patterns if statistics on owner-occupied residential housing are grouped with consuming rather than investing or business activities. A flexible system of social accounts with adequate detail permitting users of the data to group figures into a variety of aggregates to suit purposes as they arise would be much more useful than the present body of statistics which are rigidly aimed at construction of a few arbitrary aggregates.

In my own econometric studies, I have never found it possible to accept data in the form published by the Department of Commerce. There has always been a necessity to adjust and recombine materials by drawing on unpublished records. The same is true of numerous other research workers using different techniques. A reorientation of the programs of basic data gathering organizations to meet the needs of research is required, and the National Income Division of the Department of Commerce, so closely wedded to the time-honored objective of measuring total output, is one of the most important places in which a changed outlook would be rewarding.

Specific concepts, in addition to the example of corporate profits and residential housing used above, raise problems of disagreement. The more significant of these shall be taken up in turn:

Depreciation. The practice of the National Income Division is to value depreciation estimates in accounting prices (book values essentially) in all sectors except agriculture, where they use the replacement cost estimates of the Department of Agriculture. This gives a curious mixture of prices, one that is most unsatisfactory for using data from the social accounts to study capital growth. If social accounts are to assist us in measuring welfare, in some sense, they must surely provide us with material for estimating net investment, the change in the stock of productive capital. Numerous other uses of net investment and depreciation statistics also arise. Pessimistic statements are made by the authors about the possibility of revaluing depreciation, especially with limited resources, but this is such an important item that other things should be sacrificed in order to devote more efforts in this area. The works of Fabricant[6] and Goldsmith[7] have broken the ground for the Department of Commerce. I would venture the personal opinion that revaluation of the present estimates from materials now available without any substantial refinement is to be preferred to the procedure now used in the social accounts. This opinion is offered after having considered the comparative accuracy of other items, say professional income, which are considered reliable enough for inclusion in the accounts. Moreover, some components of depreciation are not available from accounting records (residential real estate is a major example), and the Department of Commerce must prepare their own estimates. They could equally well prepare these in terms of replacement instead of original costs, and have another large component in the same price system as agricultural depreciation.

It is even worth arguing that book values should be entirely discarded. Statistics of wealth, annual gross purchases, prices, and estimated useful life could be combined to give an entirely independent set of estimates for those components now based on accounting records. In many respects, these estimates would be superior to those contained in accounting records. Aside from the price level problem, there is substantial suspicion that business accounting reports are geared to other objectives than measuring capital consumption in their depreciation practices. The National Income Division can argue that estimates of gross national product are unaffected by the valuation system for depreciation, but this argument carries little weight since so many other important items are directly affected.

If depreciation is revalued, profits must be changed in a compensa-

[6] S. Fabricant, *Capital Consumption and Adjustment* (New York, National Bureau of Economic Research, 1938).

[7] R. W. Goldsmith, "A Perpetual Inventory of National Wealth," *Studies in Income and Wealth*, Vol. 14 (New York, National Bureau of Economic Research, 1951).

tory fashion; hence book profits would no longer be the basic figure in the national accounts.

Government interest. Formerly, government interest payments like other interest payments were regarded as factor shares and included as part of national income. With the growth of interest payments on an enormous war debt, the National Income Division correctly recognized a distortion in national income statistics. Their reaction has been to exclude all government interest payments from national income and to regard the government's contribution to production to be measured only by wage and salary payments. Fortunately the published accounts list government interest payments separately so that analysts can easily revise the figures to include government interest payments if they so desire. However, we might ask more of our social accounts. In particular, a more careful accounting should be given of the entire government sector. As Colm and Kuznets have pointed out, some government services are intermediate products, while others are final.[8] According to their position, the production of all government services (or goods) would have to be classified as intermediate or final with the former excluded from national income and the latter included. Some wage payments would fall in one category and some in another. We may forget about government interest payments as a component of income and focus attention on the services yielded by government capital. Unlike private bonds, government securities are not issued on a self-liquidating basis; therefore government interest payments should be treated exclusively as a transfer in this more detailed accounting scheme. The services of government capital must, like wage payments, be classified as intermediate or final, with only the latter included in national income.

The valuation problems for such treatment of government accounts are overwhelming; therefore a pragmatic scheme like that adopted in the Canadian national accounts may be suggested as a more desirable alternative than the approach used now by the Department of Commerce. The Canadians attempt to distinguish between productive and unproductive government interest payments. In this country state and local debt has not been directly used for war finance and should be included in national income. Federal government interest payments on nonwar debt could also serve as a rough indicator of services yielded by government capital. In spite of the estimation problems involved, attempts to obtain more meaningful figures would be superior to the

[8] G. Colm, "Public Revenue and Public Expenditure in National Income," *Studies in Income and Wealth,* Vol. I (New York, National Bureau of Economic Research, 1937). S. Kuznets "Government Product and National Income," *Income and Wealth,* Series I, ed. by E. Lundberg (Cambridge, Bowes and Bowes, 1951). Colm cites A. C. Pigou. *A Study in Public Finance* (London, Macmillan, 1928), for an earlier expression of this idea.

present biases. These remarks on government interest payments are mainly concerned with the use of national income statistics for the measurement of welfare, and while we pursue this aim, we must not lose sight of the multipurpose aspects of social accounting.

Disposable income. The usefulness of this concept is largely related to estimating economic behavior, particularly spending and saving behavior. It is more true in this case than in others that a variety of concepts are needed to deal with problems as they arise. Even for the familiar and popular problem of studying patterns of consumer expenditures it is not clear how we should define disposable income. The Department of Commerce would do well to provide us with material for estimating several concepts and should attach no intrinsic significance to its own definition.[9]

Licenses and fees paid to governments are deducted, like personal taxes, from income payments in calculating disposable income. On the other hand, bridge and road tolls, which are like many licenses and fees in that they are discretionary personal outlays, are treated as consumer expenditures. In general, we might argue that some deductions now made from personal income to get disposable income should be transferred to consumer expenditure. Other items which should experimentally be left in or out of disposable income are contractual obligations, capital gains, and corporate saving. The last mentioned item is, of course, easily available in the present arrangement of accounts, but the other two are not. Capital gains are religiously excluded from national income statistics, but this practice is hardly acceptable if emphasis is shifted from the objective of estimating aggregate output to the preparation of useful social accounts. The authors are by no means unaware of these problems but they make little contribution toward their solution.

Unilateral transfers abroad. In the postwar period, the United States government has made large cash grants to foreign countries for purchases of its domestic goods and services. The method of entering these transactions in the national accounts is, by the authors' own admission, not very satisfactory. In addition, the description of their procedures is not sufficiently elucidating to enable analysts using data in the accounts to avoid pitfalls. It is almost necessary to supplement the present document with a clarifying article by W. Salant[10] in order to be certain of the interpretation of published data.

[9] The discussion between C. L. Barber and S. A. Goldberg is instructive in this respect. C. L. Barber, "The Concept of Disposable Income"; S. A. Goldberg, "The Concept of Disposable Income: A Reply," *Canadian Jour. Econ. Pol. Sci.*, 1949, XV, 227-29 and 539-42.

[10] W. Salant, "International Transactions in National Income Accounts," *Rev. Econ. Stat.*, 1951, 33, 304-15.

In effect, unilateral transfers are recorded in three places of the accounts. In the first instance, when the cash credit is made available to foreign countries, government expenditures are increased by the amount of the transfer. Simultaneously imports, a negative component of national product, are increased by the same amount. On balance, the transaction has no effect on aggregate output, but it does swell the statistics of government expenditures and imports for anyone who wants to use these data in separate analytical studies. In the second instance, when goods and services are purchased with these funds by foreigners, exports are increased. This transaction may not occur in the same accounting period as the initial cash transfer. For many purposes, this entire transaction is a government expenditure, pure and simple, in which goods and services are given to foreign countries. They should be entered in government purchases of goods and services and not in other accounts. However, a separate account with transfer items, suggested by the authors, would be useful.

In suggesting that various controversial or debatable items whose conceptual basis is not clear to all theoreticians be given alternative treatment by the National Income Division, we do not lose sight of the fact that they are a responsible government agency and are prevented from engaging in certain more speculative types of research. Yet more satisfactory treatment of key items such as depreciation, government interest, and disposable income is an urgent minimum task and, as argued above, not subject to larger margins of error than will be found in other items which are voluntarily published. A lowering of quality standards would not be entailed in revising the estimates of the items discussed here.

We have come to look upon the statistics of national income in the United States as the most reliable in the world, in fact nearly as the absolute truth. Reports are periodically released in the popular press about movements in national income as though the data contained in them were facts. The true character of these data as *estimates* is brought out in Part III of the volume. My impression, from reading this section of the report, is that I had previously overrated the accuracy of the data. My faith is now shaken and I am able to take a more realistic view, surely that of the authors. The comprehensiveness and detail of the tasks involved in the intricate estimates are overwhelming; diverse sources are combined for proxies, benchmarks, extrapolations, interpolations, and other indirect devices. We can only congratulate the National Income Division on performing their estimating tasks as well as the available data permit and on explaining this complex operation to users of their material.

A brief summary reviewing the main techniques used for each major

component of income and expenditure may be helpful in forming an impression about the methods and their reliability.

Wages, salaries and supplements. This series is primarily based on payroll statistics. Sample surveys are used for farm labor and a rough estimate from wage and employment data is used for domestic servants. On the whole wages, salaries, and supplements are reliably estimated. They are probably the most accurate of all major income components and account for a large share of total factor payments.

Unincorporated and professional enterprise. Personal income tax returns contain some accounting data for unincorporated business, and serve as the main source. Much more detail is needed than can be gleaned from the statements that are filed on the returns. The methods of adjusting for persons not filing returns are inadequate, especially in depression years, when there are likely to be a number of businessmen receiving low or negative income. Farm income is estimated by the Department of Agriculture on the basis of mail questionnaire surveys, censuses of agriculture and crop reporting schemes. Professional income is also determined from mail surveys, but the indicated response rates are extremely low, 15 per cent of the mailing on the average. In addition, there is serious doubt whether professionals are willing to report the full amount of their income to any government agency. There are strong reasons to question the accuracy of income data in the entire sector of unincorporated enterprise.

Rental income of persons. Rental income of business is included under income of unincorporated or incorporated enterprise. Individual income tax returns are used to establish benchmark estimates for net rent receipts. Census statistics, samples, and the rent index are used for interpolation or extrapolation. The estimation of imputed rent on owner-occupied homes is based on essentially the same sources. Rental income from farm property is separately estimated by the Department of Agriculture. The rent series, like the series on income from unincorporated business, is lacking in reliability.

Corporate income. Corporation income tax returns supply the basic data for estimating corporate income, the sum of dividends and retained earnings. Seemingly this series is accurate, but the accuracy applies only to book values. There are many reasons to believe that reported earnings are not the true earnings figure we want for many applications of social accounting data. In so far as the deviation of earnings figures from economists' norms are balanced by deviations in the opposite direction among other components of national income, the measure of aggregate output will be unaffected. Even book-value figures, however, present difficulties for the National Income Division. They must make adjustments for audit, capital gains, foreign dividends, mutual cancel-

lation of domestic dividends, and other items. In general book-value profits rank high in reliability among income components.

Interest. Corporate and government interest are well covered, the former in corporate income tax returns and the latter in government financial reports. Income tax data, consumer credit statistics, and miscellaneous sources are drawn upon for the estimate of the remainder, a major component of which is imputed interest rendered by financial intermediaries. The curious practice is followed of not including interest on charge accounts or installment debt other than that on automobiles. Except for corporate and government interest, this factor share is probably not reliable.

Personal consumer expenditures. Expenditures on commodities are estimated mainly by Kuznets' commodity flow method until 1939 and extrapolated from that point by indexes of retail sales. The commodity flow method starts from the value of production, allocates output among finished and unfinished producer or consumer categories, and corrects for inventories, distribution charges, and retailers' markups. This procedure involves a complex series of steps, each of which requires judgment and is a potential source of error. Errors in allocation of output between consumer and producer goods are not always offsetting in the estimation of total output. Automobile purchases and some other items are estimated by the retail valuation method (multiplication of price indexes and quantity data). The data on used cars are rough, while the data on new cars contain an arbitrary separation between producer and consumer goods.

Expenditures on services are estimated from annual reports of railroads and utilities; censuses of housing, business, and agriculture; sample surveys on professional incomes; and other sources. Some of these sources provide scanty information, but even in the case of supposedly accurate statistics like those of rail passenger travel, a separation must be made between personal and business expenditures. Errors in making this separation are not offsetting for the measurement of aggregate output.

There are undoubtedly errors in the consumption component of national expenditures, but the National Income Division must be praised for the elaborate detail they have presented on types of expenditures and the complete reliance on direct information for this strategic magnitude.

Construction. Public reports, building contracts let, and building permit records are the main sources for estimating construction. Data from the F. W. Dodge Corporation cover only states east of the Rocky Mountains and must be extended to the entire country. Permit data traditionally understate the value of construction and must be revised

upwards. In addition there are problems in estimating construction in nonpermit and farm areas. Expenditures on additions and alterations are significant in total construction outlays and are based on permit statistics, yet permits are not issued for many such expenditures. On the whole, construction expenditures rest on reliable bases, but they leave room for definite improvement.

Producers' durable equipment. The commodity flow method is used for this item in a similar fashion to its use in estimating consumption, with many of the same possibilities of error. Motor vehicle data are valued directly from price and quantity series, while other types of equipment, such as rail equipment, are estimated directly from industry sources. A decent level of accuracy is probably achieved.

Inventory change. Inventory data are notorious for providing pitfalls for national income statisticians. The basic problem is to revalue the change in book value data in order to measure the value of the change instead of the change in value. The National Income Division has devoted careful effort to this task. They have tried to classify book data by Lifo or Fifo valuations and used adjustment techniques appropriate to each valuation. The data on corporate inventories come from corporate income tax returns, but the data on other inventories come from censuses and inadequate individual tax returns. The job is undoubtedly done with the utmost care, but the result cannot be marked with a very high degree of reliability simply because of the lack of necessary basic data.

Net foreign investment. Foreign commerce statistics on goods and some factor payments are undoubtedly quite satisfactory. These make for accuracy in the estimation of the foreign balance. Remittances, travel, and tourist expenditures seem weak, however. Data on remittances cover only a limited number of financial instruments. The samples of passengers described to determine consumer expenditures on transportation and tourism cannot be said to inspire confidence.

Government expenditures. The receipts and expenditures of the federal government are soundly reported in budgets. A series of adjustments must be made to eliminate transfers, subsidies, and other items. Expenditures on goods and services are finally estimated as a residual. Some components of goods and services are, however, directly estimated. State and local data are less satisfactory and pose some problems in the conversion from fiscal to calendar year accounting. Notwithstanding these adjustments, the series on government expenditures is highly reliable.

Personal savings. The subtraction of consumer expenditures from disposable income yields a residual estimate of savings. Like all residual estimates, the savings data permit diverse errors to enter, and the

resulting reliability is low. We do, however, obtain direct estimates of savings from data published by the Securities and Exchange Commission, and these could possibly be used for many purposes in lieu of the estimate of the National Income Division. A useful table (6) included in the document under review reconciles the liquid savings estimates of the S. E. C. with the residual estimates contained in the national income accounts. In this reconciliation, data on many specific items useful in deriving alternative aggregative concepts are, incidentally, made available.

The appraisal in this review of components of income and outlay by relative degrees of accuracy largely follows the listing given in *National Income*. This type of analysis is useful for several applications, and the technicians who compile the material are certainly in the best position to furnish a listing in the proper order. Some econometric applications have taken into account the existence of errors of observation, but in practice it has not been feasible to determine the relative error variances of the series used. The authors do not provide us with error variances, but they do take us a good step nearer this end. It is possible that useful econometric results could be ascertained from the type of information that is available to the national income statistician. It is hoped that work on the assessment of relative errors will be pushed in future efforts so that we may accumulate even more useful measures than crude rankings through experience.

A possible measure of reliability, in terms of internal consistency, in the estimation of components of income and expenditure is the size of the statistical discrepancy, the divergence between the estimates of national income and national expenditure or product after certain reconciling items in one series but not the other are taken into account. The size of the statistical discrepancy is often cited in favor of the accuracy of the national income estimates of the Department of Commerce. While some encouragement can be taken from consideration of the magnitude of the discrepancy, we cannot remain complacent over the fact that the figure is as large as $3-5 billion in some years. Percentagewise in terms of gross national product this seems to be small, but it represents the yearly output or income of many persons. It is definitely not negligible. As is well known, individual key components can be grossly in error, while the national income and expenditure accounts nearly balance in total. More work is called for in the analysis of this term. What are its time-series properties? Does it behave like a random series?

Throughout the discussion of the methods used in compiling the main items of the social accounts it was observed that sample surveys are used, in some cases to extend benchmarks and in others to establish

basic series. The different surveys used vary in quality, but among the poorest are some based on mail questionnaires. The response rates are often extremely low, leading one to doubt the usefulness of the collected material for calculations in a field where aspirations for accurate measurement are high. The most obvious suggestion, undoubtedly entailing additional expenses, is to replace these surveys with personal interview surveys based on carefully selected samples.

It is interesting to consider a number of ways in which well-conducted field surveys could be further exploited as a means towards filling in some of the largest gaps in the social accounts. A fruitful area in this respect is the unincorporated enterprise sector. Personal interviews could be conducted to ascertain prevailing accounting practices and to collect more detail than is reported in personal income tax returns. A very important item for analytical studies is a measure of unincorporated business saving to parallel the concept of corporate savings. The accounts in the Commerce Department's document do not provide information on these entrepreneurial savings, and direct personal interviews seem to be practically the only feasible source for obtaining reliable estimates. On the income side of the accounts, various subdivisions can be made into farm income, entrepreneurial income, wage income, etc. On the expenditure side corresponding divisions cannot be found for matching in analytical studies on expenditure behavior. Farm spending and saving or entrepreneurial spending and saving are not separately given, and survey statistics seem to be the logical source for rounding out the accounting system in this respect. It will not be satisfactory to prepare isolated surveys to attempt to provide some benchmark estimates where no others exist. We really need a repetitive flow of surveys to supply a continuous record of various basic data.

The structure of our national accounting system for the most part follows the well-established lines set out in early national income estimates. A clearer picture of the national economy is often obtained from accounting structures more closely resembling those that have been widely and successfully used in operating private enterprise. If the economy is split into groups such as households, business firms, financial institutions, government, and the outside world, we can envisage income statements and balance sheets for each group. The income statement consists of receipt and expenditure items that are components of the present national accounts. Double entry arrangements into income statements or receipt-expenditure accounts give good views of the operation of each sector and also of their linking together in the circular flow mechanism. Either conventional balance sheets of assets and debts, or statements of changes (over the accounting period) in these capital items are needed in addition to the flow statements on receipts

and expenditures. The Dutch social accounting system laid out in this form has achieved great elegance in presentation and has proved quite useful in economic planning.[11] The schemes of Richard Stone,[12] based usually on the British economy have been even more elaborate but have the same general nature of giving a unified accounting treatment to the entire system. Less preoccupation with certain arbitrary aggregates is perhaps the reason that the accounting presentation abroad has been developed to a more refined state than in this country. We may be pleased to observe that in the present volume a series of tables is given in which current income accounts are presented for the business sector, the personal sector, government, and the rest of the world. These accounts are given on a highly aggregative basis for the year 1950. A vigorous research program designed to reveal more detail in a larger number of sectors would be a more suitable objective of national income research than that of measuring aggregate output in some sense. The capital account in the framework of the Commerce document is very gross; it simply shows the mutations in less than a dozen asset-liability items.

The constant dollar series on national product represents one of the major new contributions of the present volume. The National Income Division has performed this job carefully, deflating each of several detailed components by the corresponding price index. I can fully sympathize with the authors' remarks that various alternative experiments in weighting and other details have had little effect on the final result. In fact, much cruder deflating methods used by Harold Barger and myself on the same current price data have produced nearly the same result for the valuation of gross national product in 1939 dollars. Nevertheless it is important to have the job done by detailed components in an agency that can afford the resources because periods could arise in which more refined calculations would show truer results than would crude methods.

The revaluation to constant dollars is carried out only for the product or expenditure side of the national income accounts. It is interesting to speculate on the possibility of similarly revaluing the income side. The components of the wage bill could be deflated by indexes of wage rates; components of rental income could be deflated by indexes of rent. The appropriate concepts are not clear for all income shares such as corporate profits, interest, entrepreneurial income, and other items that are not primarily formed as a product of market prices and quantities. Progress could, however, be made in the direction of revaluation of

[11] See, *e.g.*, *Central Economic Plan, 1952*, Appendices, Central Planning Bureau, The Hague, August 1952.

[12] R. Stone, "Functions and Criteria of a System of Social Accounting," *Income and Wealth*, Series I, ed. by E. Lundberg (Cambridge, Bowes and Bowes, 1951).

some major components of income. If the entire income side could be expressed in constant prices together with the expenditure side, we could construct a closed set of accounts in a constant price system.

By orienting ourselves in a social accounting framework and neglecting specific aggregates we could consider the problem of revaluing in each sector all debits and credits expressible as products of market prices or wages and quantities. Remaining items in the accounts, essentially balancing items such as profits and savings, could be revalued on a residual basis, as the difference between all other debits and credits in the accounts revalued to the constant price system. Ultimately, the complete set of revalued items could be combined into aggregates of national income, national product, and national expenditure.

Users of national income data who study trends and fluctuations in the economy will profit considerably by having the constant-dollar series of national product available to them. There are other tasks, yet undone, for which it would be appropriate to ask the National Income Division to allocate some of its resources in the interests of enhancing our knowledge of the economy. We have, on the one hand, Kuznets' annual estimates of national income covering the period since 1919 but not maintained currently in competition with the Department of Commerce and, on the other hand, the estimates discussed here for the period 1929 to date. Prior to the 1947 revision of concepts by the Department of Commerce there were available statistics, based on homogeneous concepts, giving a picture of the economy from 1919 to 1946. A new, and perhaps more careful, splicing of the two bodies of data is required for the study of various problems in the development of our economy by methods of time series analysis.

Quarterly data are available in the volume from 1939 to date. Barger[13] has published quarterly estimates for the period 1921-1938, and these too need to be carefully spliced with the current series. For many purposes of analysis, short-run data are essential and these should, if possible, be available for a continuous period of many years. The new quarterly estimates are quite aggregative, covering only the main components of national income and product. It would be desirable to have more detail forthcoming as a result of new efforts in the building of quarterly series. It should also be mentioned that the quarterly data are all presented in current prices. There is a present need for these data in constant dollars.

Although the quarterly series are the most important in several types of analysis, especially business cycle studies, they are unfortunately less reliable. The discussion on methods of estimation in the volume refer

[13] Harold Barger, *Outlay and Income in the United States, 1921-1938, Studies in Income and Wealth,* Vol. IV (New York, National Bureau of Economic Research, 1942).

only to annual statistics, and we know little about the inner character of the quarterly series compiled since 1939. There is need for a similarly revealing description of quarterly estimates—of interpolations, seasonal adjustments, the use of samples, etc.

The shifting of the burden of preparation of national income data from pioneering statisticians working in small research units to a large government agency has proved to be thoroughly desirable. The workmanlike job described by the Department of Commerce authors shows the advantages of this shift at the present stage of development of the subject. Accuracy of the resulting data has definitely been improved. We express our hope, however, that work in the subject will not become routinized; that statisticians both inside and outside the National Income Division will continue to bring new ideas to bear on the problems of social accounting.

COMMUNICATIONS

Population Growth and the Demand for Capital

In discussions of the stagnation thesis economists still disagree about the relative significance of a decline in the percentage rate of population growth and a decline in the absolute rate of growth. A number of supporters of the stagnation thesis attach a special importance to the absolute rate of growth apparently on the grounds that the acceleration principle is based on the absolute rather than the percentage rate of growth in final demand. Thus Benjamin Higgins states: "Speaking generally, the absolute rate of growth is the more important concept, and a falling percentage rate of increase is significant mainly as a harbinger of a later drop in the absolute increase. . . . For that part of the argument based upon the acceleration principle, the absolute rate of increase is clearly more important."[1] Similarly A. H. Hansen, after a reference to the long-run effect of the percentage rate of population growth upon capital formation, states: "The business depression in 1929 was the first one in our history in which a drastic decline in the absolute increment of population growth occurred. Now we all know that the acceleration principle in business cycle theory is based on the absolute increment of growth of final demand and not on percentage increase. Here was a wholly new factor that contributed to the severity of this depression."[2] Likewise, H. A. Adler states: "The reason for emphasizing the absolute increment in population growth with respect to the 1930 depression lies in the working of the acceleration principle."[3] The opposite view to this has been summed up by George Terborgh in his terse remark that, to say the absolute decline in population growth is more important than the relative decline "is like saying that a pound of growth on a dog has the same significance as a pound on an elephant."[4]

None of the writers who stress the importance of the absolute rate of growth state exactly why or to what extent the acceleration principle supports their argument. If their conclusions are based on a belief that this principle applies only to the case of absolute growth, they have fallen into an error. The acceleration principle can be applied either to a percentage rate of increase or

[1] "Concepts and Criteria of Secular Stagnation," *Income, Employment and Public Policy* (New York, 1948), p. 99. Higgins also notes certain circumstances where he believes that the percentage rate of growth is the more important concept.

[2] *Economic Policy and Full Employment* (New York, 1947), p. 300.

[3] "Absolute or Relative Rate of Decline in Population Growth?," *Quart. Jour. Econ.* (Aug. 1945), LIX, 631.

[4] "Dr. Hansen on 'The Bogey of Economic Maturity'," *Rev. Econ. Stat.* (Aug. 1946), XXVIII, 170.

to an absolute rate of increase in population or of final demand. Its basic assumption is that there is a fixed ratio between the level of income or consumption and the quantity of capital. It is true that textbook illustrations often state the principle in terms of absolute increments of final demand but this does not mean that it cannot also be applied to percentage increments. It seems more probable that these writers have been thinking of the fact that, neglecting replacement demand, an absolute fall in the volume of investment will occur when the absolute increments in final demand begin to fall. But the significance of this conclusion may be more limited than has been generally realized. Since there has been some confusion on this matter, it will be useful to state these relations more precisely. The application of the acceleration principle to the cases of absolute and relative growth in population will be considered in turn. For simplicity it will be assumed initially that the level of per capita real income remains constant. The effects of replacement demand are neglected throughout.

Let us suppose that population is increasing by equal annual increments which we will designate by p. Let k represent the amount of increased investment measured in dollars of constant purchasing power that is called forth by the addition of one person to the population. Accordingly, the total amount of investment due to the working of the acceleration principle in relation to population growth (hereinafter called population investment) will be $k \cdot p$ and this will remain constant as long as population continues to grow by equal annual increments. Now it is clear that if per capita real income remains constant the total national income must rise as the population grows. If savings are a constant percentage of income, the total amount of savings will rise also. Thus as the population grows at a constant absolute rate, population investment will become a successively smaller percentage of national income and of total savings. A gradually increasing percentage of the total investment required to offset current savings will have to come from other sources. Hence even when population is increasing by equal annual increments, there is need for a rising volume of investment from sources other than population growth if chronic underemployment is to be avoided.[5]

Let us now assume that population, instead of growing each year by constant absolute amounts, grows at a constant percentage rate which we will designate p'. Assume as before that the amount of investment called forth by the addition of one person to the population is k. Then, if we denote by P_n the population at the beginning of any year n, the absolute growth in population for the year n will be $p' \cdot P_n$ and the absolute amount of population in-

[5] This analysis has an application to a famous discussion in the literature of the acceleration principle. Ragnar Frisch has shown that under certain circumstances a decline in the rate of increase in consumer-taking need not lead to an absolute fall in the level of investment. This would be true if the rise in the replacement demand for equipment were sufficient to offset the fall in the expansion demand for capital equipment. But even in this special case Frisch's argument fails to note that the volume of net investment would fall and that the volume of gross investment, even though constant, would be a declining percentage of national income. See R. Frisch, "The Interrelation between Capital Production and Consumer Taking," *Jour. Pol. Econ.* (Oct. 1931), XXXIX, 646-54, and the discussion with J. M. Clark in subsequent issues.

vestment will be $k \cdot p' \cdot P_n$.[6] From this it follows that the ratio of population investment to national income for any year n will be equal to:

$$\frac{k \cdot p' \cdot P_n}{P_n \frac{(1 + p')}{2} y},$$

where $P_n \frac{(1 + p')}{2}$ is the population at midyear and y is the level of per capita real income. Since P_n cancels out of both the numerator and denominator we are left with an expression in terms of k, p', and y, all of which are constants by hypothesis. This means that, where population is growing at a constant percentage rate, population investment will remain a constant percentage of income. If, in these circumstances, saving is a constant percentage of income, population investment will absorb a constant proportion of total savings. It also follows from this expression that a decline in the percentage rate of population growth will cause the ratio of population investment to national income to decline.[7] One particular form of a decline in the relative rate of population growth is a population which increases by constant absolute amounts.

Finally, let us drop the assumption that the level of per capita income remains constant and assume instead that it is gradually rising. It seems reasonable to suppose that any growth in per capita income would cause k to increase also.[8] If each person in the population enjoys a higher standard of living, it is not unreasonable to expect that the capital required to produce this higher standard will be larger also. If the ratio of k to y remains constant, which will be true if the capital-output ratio remains constant, the conclusions reached above are unaffected. In this particular case the ratio of population investment to national income will remain constant as long as population grows at a constant percentage rate even though the level of per capita income is rising. Only if k and y grow at different rates is it impossible to state definitely what will happen to the ratio of population investment to national income. However, unless the size of the ratio k/y is inversely affected by the rate of population growth, it will still be true that the ratio of population investment to national income will decline more slowly (or grow more rapidly)

[6] This assumes a constant percentage growth compounded annually.

[7] The proof is as follows. Assume another rate of growth p'' such that $p' > p''$. It is required to prove that

$$\frac{k \cdot p'}{y + \frac{p'}{2} \cdot y} > \frac{k \cdot p''}{y + \frac{p''}{2} \cdot y}.$$

If we divide both sides by k, multiply through by y and then multiply both sides by the product of the remaining denominators we obtain $p' + \frac{p'p''}{2} > p'' + \frac{p'p''}{2}$, which must be true if $p' > p''$.

[8] It should be noted that I am concerned here only with the effects of rising per capita income on the amount of investment induced by population growth. This growth in per capita income will, of course, induce additional investment if the capital-output ratio is to remain constant.

when population grows at a constant percentage rate than when it grows at a constant absolute rate.

In view of these conclusions why have a number of economists placed so much emphasis on the absolute rate of population growth? For with a constant absolute rate of growth one can expect a steadily declining ratio between population investment and national income. As was suggested above, it seems likely that the economists in question have been thinking too much in terms of a static economy in which it might be reasonable to assume that a constant absolute volume of investment would maintain an acceptable level of employment for an indefinite period of time. Needless to say, we live in a rapidly growing economy and in these circumstances we are likely to need a growing volume of investment. There can be little question then that the percentage rate of growth in population is a much more relevant concept than the absolute rate of growth.

The argument advanced here is essentially similar to that given by a number of economists who have discussed the dynamic growth aspects of capital investment.[9] The principal difference is that these economists have been primarily concerned with the relation between capital investment and the rate of growth in output as a whole whereas my argument has been restricted to the relation between population growth and capital requirements. In both instances the basic assumptions are that the capital-output ratio and the average propensity to save remain constant. Given these assumptions Harrod, Domar and others have shown that a constant proportionate (not absolute) rate of growth in output is required to induce sufficient capital investment to offset the amount of saving that would be forthcoming at a full-employment level of income. The required rate of growth is equal to the average propensity to save multiplied by the reciprocal of the capital-output ratio.[10] I have shown that under similar assumptions a constant proportionate rate of growth in population is necessary if population investment is to remain a constant proportion of national income and total saving.

While I have demonstrated that under certain assumptions a constant percentage rate of population growth will induce a level of investment that will remain a constant proportion of national income, this still leaves unanswered the further question of whether one constant percentage rate of growth is better or worse than another. I should like to suggest that for any country at any point of time there is some optimum rate of population growth.[11] An optimum rate of population growth can be defined as that rate of growth which is most conducive to the maintenance of a high level of employment and a rapid rate of economic progress (where economic progress is defined as increase in output per capita). A more rapid rate of growth than this might

[9] See, in particular, R. F. Harrod, *Towards a Dynamic Economics* (London, 1948); E. D. Domar, "The Problem of Capital Accumulation," *Am. Econ. Rev.* (Dec. 1948), XXXVIII, 777-94; and W. Fellner "The Capital-Output Ratio in Dynamic Economics," *Money, Trade, and Economic Growth* (New York, 1951); and the references given by Fellner on p. 106.

[10] Fellner, *op. cit.*, pp. 111-12.

[11] Higgins has suggested the need for such a concept. See *op. cit.*, p. 106.

slow up the rate of economic progress by reducing the average propensity to save, because of the high consumption rate associated with large families, thus in turn reducing the amount of capital investment.[12] A slower rate of growth might induce less capital investment and thus be less favorable to both the maintenance of a high level of employment and the rate of economic progress.

It seems likely that the optimum rate of population growth would change over a period of time as the ratio between a country's population and its natural resources changed. In effect, this means that the optimum rate of population growth would vary as the position of a country's population changed with reference to its optimum population.[13] It would also vary as the volume of opportunities for investment arising out of growth in per capita output changed. When the population is below an optimum level, a high rate of population growth will mean a rapid approach towards the optimum. This movement of the population towards an optimum will cause an increase in output per capita because of the more favorable ratio of total population to resources. On the other hand, with a lower rate of population growth a larger proportion of total savings will go into forms of capital investment which help to raise the level of output per capita. Under these conditions the minimum acceptable rate of population growth would be the rate which, given the average propensity to save and the opportunities for investment related to growth in output per capita, was just sufficient to maintain full employment. A maximum acceptable rate would be a rate so rapid that any further increase in the rate of population growth would cause a slowing up in the growth of output per capita either because it reduced the community's propensity to save or because the total supply of capital equipment did not keep pace with the growth in population. Within the limits set by this maximum and minimum, a range which could be substantial, it might be difficult to determine an optimum position.

In contrast, when a country's population is beyond its optimum, any increase in the rate of population growth above the minimum rate necessary to induce sufficient investment to maintain full employment will be clearly undesirable for it will result in a less favorable ratio of population to resources and a lower level of per capita output. Thus, where a country's population is beyond the optimum, the optimum rate of population growth will depend primarily on the opportunities for investment related to growth in output per capita. In fact, if growth in output per capita alone would induce sufficient capital investment to maintain full employment, the optimum rate of popula-

[12] This introduces the question of the possible effects of population growth on the propensity to save, a difficult problem and one beyond the scope of this note. It also assumes that the amount of investment is limited by the amount of voluntary saving, that inflation and forced saving are prevented by monetary controls.

[13] The difficulties of defining an optimum population have been carefully discussed by J. R. Hicks. See J. R. Hicks and A. G. Hart, *The Social Framework of the American Economy* (New York, 1945), pp. 240-43. I would suggest that the optimum population be defined with reference to the amount of capital equipment, the opportunities for foreign trade and the state of technical knowledge at a given time and that we recognize that this optimum will change over time with changes in these factors.

tion growth would be zero. As Fellner has shown, given a constant average propensity to save (s) and a constant capital-output ratio (R), the required over-all rate of growth necessary to induce sufficient capital investment to maintain full employment is a constant percentage rate of growth of $\frac{(s)}{R}$.[14] When a country's population has exceeded the optimum, the more of this required rate of growth which can be made up by growth in per capita output the lower will be the optimum rate of population growth. When a country's population is below the optimum, it may be difficult within certain limits to determine the best combination of population growth and growth in output per capita needed to meet this required rate of growth.

In practice the concept of an optimum rate of population growth is difficult to apply. Consider, for example, the changes that have occurred in the percentage rate of population growth in the United States over the period 1790 to 1950. The relevant data are given in Table I.

TABLE I.—PERCENTAGE GROWTH IN POPULATION, BY DECADES, THE UNITED STATES, 1790 TO 1950

Decade	Percentage Growth	Decade	Percentage Growth
1790–1800	34.8	1870–1880	26.0
1800–1810	36.4	1880–1890	25.5
1810–1820	33.1	1890–1900	20.7
1820–1830	34.1	1900–1910	21.4
1830–1840	32.7	1910–1920	15.2
1840–1850	35.9	1920–1930	15.6
1850–1860	35.5	1930–1940	7.2
1860–1870	26.6	1940–1950	14.9

Source: U. S. Bureau of the Census, *Historical Statistics of the United States, 1789–1945* (Washington, 1949) and *Survey of Current Business*, July 1951.

If we exclude the decade 1930 to 1940, rates of growth over the period 1790 to 1950 fall into four groups. From 1790 to 1860 population grew at the rate of about 33 to 36 per cent per decade. A sudden decline in the rate of growth occurred about 1860, and thereafter population grew at a rate of about 26 per cent per decade from 1860 to 1890. A further decline in the rate of growth occurred at this time and population grew at about 21 per cent per decade from 1890 to 1910. Finally, with the exception of the 'thirties, population has grown at the rate of about 15 per cent per decade since 1910. Thus there has been a regular step-like decline in the percentage rate of population growth since 1860.[15] A detailed study would be necessary to determine whether these declines in the rate of population growth were accompanied by corresponding

[14] Fellner, *op. cit.*, pp. 111-12.

[15] These data give little support to Hansen's contention that "the percentage decline in population in the United States was not marked until after World War I." See *op. cit.*, p. 299.

reductions in the optimum rate of growth. However, a few observations appear justified. It seems reasonable to suppose that the optimum rate of population growth would be higher during the earlier part of this period when the ratio of population to land and other resources was extremely low and the total population was well below an optimum. Further, the inflow of foreign capital during the first part of this period would raise the optimum rate of growth for that period. It is also possible that the rate of population growth during part of this period may have exceeded the optimum by a substantial margin.

More recently, the population of the United States has probably approached an optimum and may well have passed it. Accordingly it seems probable that the optimum rate of growth is now substantially lower than it was during the earlier part of the period, say before 1900. Some economists, in particular those of the secular stagnation school, are inclined to believe that the rate of growth in recent decades has been below the rate necessary to maintain a high level of employment. However, the occurrence of two world wars and a great depression makes the period since 1910 difficult to interpret and a more detailed study will be needed to determine whether the optimum rate of growth has declined more or less than the actual rate of growth in recent decades. In fact, the whole problem of the relation of population growth to the demand for capital merits more detailed attention than it has yet received.

In view of the recent emphasis that has been placed on the "amazing population upsurge" in the United States it may be useful to note by way of conclusion that although the absolute growth in the population of the United States during the decade ending in 1950 was the largest on record, the percentage rate of growth for this decade was slightly smaller than that of the decade ending in 1930.

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Consumption and Investment Propensities: Comments

Editor's Note: These three comments on the article by Ta-Chung Liu and Ching-Gwan Chang, published in the September 1950 issue of this *Review*, were originally submitted for publication during the period September 1950-April 1951. Publication has been delayed in part by the necessity for revisions, but mainly because the authors of the original article have been out of the country for considerable periods of time.

In an article in this *Review*,[1] Messrs. Ta-Chung Liu and Ching-Gwan Chang set out to test certain hypotheses concerning the relationship between prewar and postwar aggregate spending propensities in the United States. Their model is most unusual. There is no attempt at deflation: all magnitudes are at "current prices." Consumption, C, is made a function of gross national product, Y, and the consumers' price index, P, rather than disposable income, Y_d. Investment, I, is a function of Y and current corporation profits after taxes, F, and the latter is considered exogenous. A valiant attempt is made to

[1] "Consumption and Investment Propensities," *Am. Econ. Rev.* (Sept. 1950), XL, 565-82.

justify these peculiarities; it is the purpose of this note to raise some important doubts.

I. *Deflation*

Liu's and Chang's defense of the use of current price magnitudes is not convincing. Their first argument, that a function based on "money illusion" better conforms to theory than one which relates real consumption to real income, is ambiguous. What are the "theoretical grounds" on which we should expect the absolute price level to play a part in consumption decisions? The authors do not specify. If narrowly defined, the use of the term "money illusion" would indicate that they are suggesting "irrationality"[2] on the part of consumers. Yet, since the implication that a hypothesis of systematic "irrationality" is subject to *theoretical* proof is patently unacceptable, it is more likely that Liu and Chang are thinking in terms of "rationality" in a dynamic world. Either inelastic price expectations or "Pigou effects" could induce "rational" behavior which would appear (to an observer with a static frame of reference) like money-illusion "irrationality."[3]

By accepting the importance of such dynamic effects, however, the authors undermine the logical foundations of their own function. If current prices and incomes are the sole variables relevant to consumption decisions, then the form of the consumption function cannot be governed by tacit consideration of other variables (expectations, nonequity assets, etc.).[4] If prices and incomes are really the only things that belong on the right-hand side, then it follows that only "irrational" behavior can validate an undeflated function. No empirical evidence is cited in favor of such "irrationality" and I, for one, am loath to give up the assumption of "rationality" for a model based on systematic "irrationality."

The authors' second argument, that the indices available for deflation are of tenuous applicability, though correct in itself, is irrelevant. The technical faults of currently used deflating procedures provide excellent reason for cautious interpretation of so-called "real" figures: they do not validate undeflated figures.

Suffice it to conclude:[5] (1) that most prewar studies suggest that deflated

[2] "Irrational" is a poor word for the intended concept but its analogous place in the vocabulary of price theory and the lack of an obvious substitute perhaps justify its use. Note, however, that it must be very narrowly defined as implying nonmaximizing behavior in terms of a specified frame of reference. None of the usual (and emotive) connotations apply.

[3] See Tobin, "Money Wage Rates and Employment," *The New Economics*, Harris, ed. (New York, 1947), pp. 583 ff.

[4] Unless these variables are linearly related to prices or incomes: a presumption not on its face obvious.

[5] Liu and Chang's third defense, that the inclusion of P as a determinant of C eliminates the spuriousness of a high correlation between Y and C which would otherwise dominate the relationship in that Y and C have prices in common, is a more or less adequate counter to the charge of spurious correlation. The problem is a slippery one though. It is true that replacing two uncorrelated variables x and y by zx and zy will result in a non-zero correlation. It does not necessarily follow that a good correlation between zx and zy is spurious, for the relationship between zx and zy might be the *true*

data provide a better statistical fit than do current values, a fact not met by the Liu-Chang arguments; and (2) that, at any rate, a correct choice must be based exclusively on which alternative provides the better (more invariant) hypothesis.[6]

II. *The Consumption Function*

The function used by Liu and Chang is of the form $C = aY + bP + c$, where a, b, and c are parameters.

The authors indicate awareness of several possible ways of refining their function, but do not consider any of these of substantial importance. As regards lags, they state that despite the improvement in correlation that introduction of an additional independent variable necessarily effects, their experiments with lags resulted in only "superficial" improvements (not to mention the lower significance of the correlation) and that at any rate it is doubtful if any significant lags are inherent in annual data.

These points are well taken; nevertheless, their justification for using undeflated figures would have been more compelling had they used quarterly data and then tried lags. Had implicit expectational elements[7] been thus brought in on the right-hand side, their function would have been more readily reconcilable with the assumption of dynamic "money sophistication."

In the use of Y as a determinant of C one can also quarrel with Liu and Chang. Unlike the use of lags, the use of Y instead of Y_d is not just a simplification. The function, as it stands, does not provide us with a testable hypothesis of behavior.

There are three possible methods of approach to "the" consumption function:

1. The "Baconian" inductive-statistical approach: *i.e.*, running correlations between aggregate magnitudes with no attempt at a theoretical foundation, looking for higher and higher correlation coefficients;

2. Setting up hypotheses as to behavior (invariant with respect to a "class of structures"), then testing against relevant aggregates;

3. Basing hypotheses on the behavior of individuals ("households"), aggregating, then testing both against aggregate and individual (micro-economic) data.

If we want to find a consumption uniformity which is invariant to changes in narrowly economic magnitudes, *i.e.*, which will vary only with changes in

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one. All that can be said is that a high correlation between zx and zy is not conclusive evidence that it is in fact the true relationship.

[6] If I may defend their practice against their own defenses, I would suggest the following: within limits, the inclusion of a linear price-level term in an undeflated relation does provide a rough approximation to a deflated function (*i.e.*, a Taylor's series first approximation). But where the two periods under consideration differ in P as much as do the postwar and prewar, we must be wary of such approximations.

[7] It could be argued that implicit in the exclusive use of *current* magnitudes is a presumption that the elasticity of expectations is unity; that in fact people expect the parameters relevant to their decisions not to change. If people really thought that they were living in a "stationary state," money illusion really would involve illusion, and what was said concerning systematic irrationality applies.

psychological motivation or the institutional and cultural "framework"[8] (and there is little sense in formulating less "fundamental" relationships), the superiority of the last approach is manifest.[9]

The line of argument followed by Liu and Chang seems to have great affinity for the first approach. There is a good fit between C and Y, hence we have *the* (?) consumption function. Their defense against criticism on this count is based on calculations indicating that disposable income is a good linear function of gross national product and that: "projections from the relation between the two during the prewar decade yield figures for postwar 'disposable income' extremely close to the actual figures" (p. 570).

If the "institutional" relationship between Y_d and Y has not changed as between prewar and postwar, it no doubt follows that an apparent re-establishment of the prewar (derived) relationship between C and Y is good evidence that the behavioristic relationship between C and Y_d is the same as before the war. It is important to note, however, that the usefulness of the Liu-Chang study is severely limited, a fact not sufficiently emphasized by their own article. Their so-called consumption function cannot be used either for prediction or for testing hypotheses of consumer behavior. It is not invariant with respect to changes in the Y *vs.* Y_d relationship, hence variations in tax structure, transfers, corporate savings, etc., will invalidate it.

The only positive justification the authors provide for the use of Y is that it simplifies the system. If Y_d is a linear function of Y, it is difficult to see the nature of the simplification. On the other hand, the advantages of using Y_d are substantial.

III. *The Investment Function*

The stated rationale of the Liu-Chang investment function ($I = dY + eF + i$, where d, e, and i are parameters) is that income is a measure of the "level of economic activities which generate demands for capital goods," while corporate profits after taxes "indicate the magnitude of the incentive for actually making the investment at a given level of demand" (p. 568).

Note that F—corporate profits after taxes—is considered exogenous. This in itself makes prediction on the basis of the function impossible, in that current corporate profits are obviously related to the level of current income. More important (given the authors' limited aims), a high degree of collinearity between Y and F renders the two parameters "e" and "d" virtually meaningless.

It is difficult to find justification for this sort of an investment function. The fact that no lags are intrinsic to annual data does not make the function any more useful: no meaningful hypothesis as to the behavior of the individual investor is being tested.

The dismissal of the "so-called 'acceleration principle'" for lack of any evidence (p. 568), seems somewhat rash. Presumably Liu and Chang were

[8] I am fully cognizant of the difficulties these distinctions involve, but they are not of essence in the present argument.

[9] This was first impressed on the writer by Professor M. F. Millikan in his graduate national income course.

thinking of the unsuccessful search for the stipulated I = f (dY/dt) relationship in time series data. Yet the lack of a discernibly consistent lead-lag relationship only indicates that *without* lags the operation of the principle is not evident. It provides no evidence one way or the other as to any delayed effect dY/dt (or dC/dt) might have on I.

At any rate, any function attempting to describe investment which does not assign a rôle to expectations (directly, or *via* lags, rates of change, etc., indirectly) and which is not grounded on a micro-economic hypothesis is justified only if one accepts the "Baconian approach" to scientific inquiry or if one enjoys running correlations.

IV. *Results and Conclusions*

Comparing the projected values of C, I, and Y with the actual *ex post* values, Liu and Chang conclude that since "the actual consumption data for 1946-1948 came *very nearly* [italics supplied] to the estimated figures," with certain cautions as to relevance outside of the range of observation "properly borne in mind, one may be permitted to say that statistical facts do not contradict the conjecture that *the* [italics supplied] prewar consumption function has more or less been restored or that it is in the process of being restored" (p. 573).

One cannot but be somewhat skeptical as to the authors' views on what constitutes "very nearly." During the years 1930-40 the largest percentage discrepancy between actual and estimated consumption was 1.08% (1938), with an absolute average discrepancy of 0.58%. For the three years 1946-1948 the discrepancies run to 4.95%, 5.88% and 2.68%, respectively, all positive (as opposed to prewar when plus and minus discrepancies almost matched each other, 5 for 6).

The estimated investment figures were completely off the mark. The authors suggest that "the failure of the postwar investment expenditures to come up to the levels estimated from the prewar investment function may perhaps be explained *partially* by the feeling of uncertainty which existed in the minds of the entrepreneurs as regards the possible course of the developments of the American economy" (p. 574). The hypothesis that the depressing effect of "uncertainty" on investment was "greater" during three years of uninterrupted high level prosperity (with a backlog of investment demand due to wartime disinvestment in many lines) than during the most depressed decade in U.S. history seems, at best, novel.

V. *Applications*

Liu and Chang apply their results to find quantitative approximations (1) to the extent of "money illusion" in the U.S. economy, and (2) to the "balanced budget multiplier." Both applications bear discussion.

1. In attempting to determine the existence and extent of "money illusion," Liu and Chang correlate real consumption with real income for the 1930-1940 period. They get a correlation coefficient indicating about as good a fit as that provided by the undeflated function. The latter, however, "gives a slightly

better postwar projection," hence "it appears that 'money illusion' did exist ..." (p. 575).[10]

To "give a quantitative indication of the extent of 'money illusion,'" the authors (i) calculate the price elasticity of demand of real consumption for the year 1948,[11] using (*a*) the undeflated function and (*b*) the "real" function; and (ii) take the difference between the two elasticities expressing the result in percentage terms. They conclude, in fact, that their result (4%) "may be considered as a measure of the extent of 'money illusion'" (p. 575).

Unfortunately, the Liu-Chang procedure has no rational justification. Note what it involves. The *same ex post* consumption figures are used to estimate the parameters of *both* functions. One of these functions seeks to explain the figures on the assumption that they were generated by a public whose consumption decisions were dominated by "money illusion." The other seeks to explain them on the assumption that "money illusion" was not of importance. *One of these functions must be entirely spurious.* If we hypothesize that "money illusion" did in fact exist, then we cannot attribute meaning to a deflated function whose parameters were calculated from data generated (by our hypothesis) by a public under the influence of "money illusion." If "money illusion" really did "produce" the data, then we must conclude that had real consumption been a function of real income (*cet. par.*), the consumption figures would have been different. The same is true if we reverse our hypothesis and base our reasoning on the presumption that the data in hand represent consumption as a function of real income.

The *same* data cannot provide meaningful parameters for *both* functions. But if one of the functions is meaningless, the elasticity calculated from it is also meaningless; if so, it is difficult to attribute any significance to the difference between the two elasticities.

2. Liu and Chang calculate a balanced budget multiplier of 2.7. Its improbability is a consequence of the weakness of the whole model. Note that the calculations imply a marginal propensity to spend out of corporation profits after taxes of only .339. There is a certain ambiguity here, since formally this figure refers to $\partial I/\partial F$, with nothing said about the propensity to pay additional dividends out of the extra profits. Yet for their reasoning to be consistent, Liu and Chang must assume either that 66.1 cents of every extra dollar of profits is not spent or paid out in dividends, or that the dividend receivers' marginal propensity to consume is zero. The authors' modest qualification that the "conclusion obtained by applying the system to the analysis of a concrete problem is . . . necessarily experimental in nature and can serve as no more than an initial reference for further work" does not prevent them from concluding that "the consequences of such a policy" (*i.e.*, simul-

[10] One wonders that they found the small differences (0.5%, 0.77%, 0.93%) between the two sets of projections significant (see p. 575).

Duesenberry, Modigliani, Woytinsky and many others have shown that the postwar consumption-saving-income ratio can be accurately predicted by prewar relations without introducing "money illusion" by taking systematic account of postwar liquid wealth position, etc.

[11] Holding money income constant at the 1948 level.

taneous reduction of G and business taxes) "would be even more disastrous if F were partially an increasing function of Y" (p. 576).

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Comment

In an article in the September 1950 issue of this *Review* Messrs. Ta-Chung and Ching-Gwan Chang argue that the price level should be introduced into the consumption and investment equations. In justification of this it is argued that, though this procedure gives "about an equally good" fit for the prewar period it gives a better fit for the three postwar years for which data are available.

This argument, however, is open to the following criticism. Both the consumption equations, the one using and the other ignoring the price term, underestimate the actual data for the postwar years; this is only as it should be, for during this period the data were influenced by a special factor, the pent-up war demand. In order to derive the true relationship, one would have to subtract this factor from the actual data, and since we do not know how large this factor is, we cannot say that the equation coming closer to the actual data (in a linear way only, for there are points of inflexion in neither the data nor the estimating equations for these years) gives a better indication of the true relationship. This consideration is enhanced by the fact that a small difference in the estimation of the pent-up demand would destroy the significance of the price term, for the differences between the equation using the price term and the equation ignoring it are 1/10, 1/8 and 1/3 (for 1946, 1947 and 1948 respectively) of the pent-up demand as measured by the difference between the actual data and the better fitting of the two equations. Thus the only evidence to show that the equation using the price term is superior is that of 1948, when the pent-up demand must have been of less importance than in the two preceding years. To argue from the evidence of one year is obviously most tenuous. A similar consideration throws grave doubt upon the estimated value of the price parameter, the calculated value of the price elasticity and also on the introduction of a price term in the investment equation.

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Comment

The new conclusions with respect to consumption presented by Drs. Liu and Chang in their recent article are as follows:

1. "Contrary to a complete absence assumed in the existing estimates of the (prewar) consumption function, the influences of 'money illusion' are statistically discernible—" (pp. 565, 566).

2. "While it cannot be definitely proven that the prewar consumption function has really been restored during the postwar years, the postwar consumption expenditures do appear to be very close to what the prewar consumption function would require them to be" (p. 566).

It is the purpose of this comment to suggest that in both cases the evidence presented points to the opposite conclusion.

As evidence of the "money illusion" (*i.e.,* that if consumers' real income remained constant but dollar income and prices fell, real consumer expenditure would increase, presumably because prices seemed lower) the authors present two equations for the consumption function. One is a standard function in which income (represented by GNP) and consumer expenditure are deflated for price. In the second, money values of income and expenditure are used directly in the equation and price is treated as an independent variable. Because "The two equations give about equally good fit for the prewar period" (both gave a correlation coefficient of 0.99), and because the new equation "gives a slightly better postwar projection," they conclude that the "money illusion" did exist (p. 575).

Examination of their new equation shows their "money illusion" to be of an unexpected character. The equation is as follows with the usual notations except that Y represents GNP, not disposable income,

$$C = 0.535\,Y + .214\,P - 3.06.$$

This can be converted to real terms by dividing through by P with $C/P = c$ and $Y/P = y$ to give the following equation,

$$c = 0.535y + .214 - 3.06/P.$$

According to this equation a lower price level produces a *decrease* in real consumer expenditure not an increase. This is the "money illusion" in reverse. It is an "illusion" which would, according to the equation, lead consumers to stop spending entirely if the price level were sufficiently low.

This apparent negative "money illusion" would be interesting if the coefficient of price in the formula had significance. Actually the influence of the price factor in the equation is small. At 1940 prices and incomes, a *doubling* of prices would, according to the formula, increase real consumer expenditure by only 2 per cent. Yet the extreme difference in prices for the data used to derive the coefficients was only from 92 to 119. Furthermore, there was a very high intercorrelation between money income (however defined) and the price index in the base period used. *Real* income fluctuated very much as did the consumer price index. Multiplying real income by the price index adds to the intercorrelation. It must be obvious that the coefficient obtained for price in the equation has no significance.

Since the introduction of price as an independent factor does not improve the coefficient of correlation, does not produce the expected relation and does not give price a significant coefficient, it is difficult to see what evidence it provides of the existence of the "money illusion." Rather, the evidence suggests that the simpler formula is the more valid of the two and that, in so far as the new formula throws any light on the "money illusion" it points to its absence.

The question whether the postwar consumption expenditures are in fact "very close to what the prewar consumption function would require them to be" involves two problems: (1) what are the relevant figures, and (2) what constitutes being "very close"?

The authors base their conclusion of the closeness of the postwar expenditure to the prewar function on the more complex of the two formulae. If the simpler and more valid formula is used, the discrepancy appears significantly greater as is shown in the first part of the table below.

Excess of Actual Consumer Expenditures Over Estimated Expenditures

(in billions of dollars)

	By Complex Formula[a]	By Simple Formula[b]
1946	7.3	6.9
1947	9.8	12.0
1948	4.8	7.2
1949		10.2
1950 First half year[c]		8.4

[a] $C=0.535Y+0.214P-3.06$
[b] $C=0.539Y+0.181P$
[c] Seasonally adjusted

The greater discrepancy is particularly important for 1948 since the authors, while recognizing that the actual figures are *consistently higher* than the estimate, attribute this to the pent-up demand arising from war shortages which could be expected to taper off as these demands are liquidated. The revised estimates for the years 1946 to 1948 do not show any such tapering. The lack of tapering is also indicated by the estimates for 1949 and the first half of 1950 which are included in the table. Rather, consumer expenditure appears to have been running some $7 or $8 billion over the prewar relation to disposable income. Since the war, consumers have been spending roughly 5 per cent more than would have been expected on the basis of prewar behavior.

Whether consumption expenditures running 5 per cent above what could be expected on the prewar basis is "very close" to the prewar depends somewhat on the point of view. A 5 per cent rise in the consumption function, if it has occurred, would seem to the present writer a noteworthy shift in a function which has so often been assumed to be stable.

But whether this shift, considered only from the point of view of consump-

tion, is significant, there can be little question that its implications for saving and the saving-investment problem are great. Below are given the actual and estimated consumer savings since the war, arrived at by deducting actual and estimated consumer expenditure from actual disposable income. The figures in parenthesis for 1950 represent actual and estimated savings, excluding the veterans' insurance payments from both disposable income and savings.

	Actual Saving (in billion dollars)	Estimated Saving (in billion dollars)	Ratio of Actual to Estimated Saving
1946	10.3	17.2	60%
1947	5.1	17.1	30%
1948	12.0	19.2	62%
1949	8.6	18.8	46%
1950[a]	12.8 (7.8)	21.2 (16.2)	60% (48%)
Average	9.7	18.7	54%

[a] First half year—annual basis, seasonally adjusted.

Since the end of the war savings have been little more than half what could have been expected on the basis of prewar relationships. Certainly from the point of view of the problem of oversaving it does not seem reasonable to say that "the actual consumption data for 1946-48 come very nearly to the estimated figures" (p. 573).

If an upward shift of something like 5 per cent has taken place in the propensity to consume, it would have considerable theoretical importance. It would tend to confirm the position of those who, at the close of the war, predicted that the great increase in the money supply and the great increase in the liquidity of individuals would give a more or less permanent lift to the propensity to consume.

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Rejoinder*

Dr. Means' criticisms center around the meaning and the significance of the "money illusion" implied in our equation (1), $C = 0.535\,Y + 0.214\,P - 3.06$,[1] which when divided through by P becomes: $c = 0.535\,y + 0.214 - 3.06/P$, c and y being deflated magnitudes.

* The authors take this opportunity to correct the following typographical errors in the original article (this *Review*, September 1950, pp. 565-82): (1) In footnote 7 (p. 572), the letters C, Y, P, I and F in the symbols RC·YP and RI·YF should appear as subscripts. (2) On page 575 an equation sign is missing before the expression in the thirteenth line from bottom.

[1] Page 572 of the original article. All variables in capital letters are measured in current money values.

Means defined "money illusion" as the situation where "if consumers' real income remained constant but dollar income and prices fell, real consumer expenditure would increase, presumably because prices seemed lower." Since, with y constant, c as calculated from the second equation given above will become smaller if P is smaller, the "money illusion" implied in the above equation would yield "money illusion in reverse" on Means' definition.[2]

There is, however, no standard way of defining "money illusion." Means' definition may be called the "money *price* illusion." Let us define "money *income* illusion" as the situation where, with real income constant but money income and prices falling proportionately, people are led by the smaller money income to believe that they are "poorer" and hence consume less. Our equation yields "money income illusion" but "money price illusion in reverse"; whereas any equation which gives "money price illusion" would yield "money income illusion in reverse." There is little doubt that people know what their incomes and prices are in money terms better than in real terms;[3] hence both types of illusion could exist.

No claim was made in the original paper that the "amount" of "money illusion" implied in equation (1) is large; at the same time, no test of its statistical significance was made. Whether "money illusion" existed significantly in the statistical sense depends entirely upon whether the constant term in equation (1), *i.e.*, -3.06, is significantly different from zero. The standard error of that constant is 1.66 which, for eight degrees of freedom, means roughly one chance in twelve that a constant term as large as 3.06 (in absolute value) or larger would be obtained in the absence of a "money illusion." This is not clearly statistically significant, but the probability is small enough to be suggestive.

Whether on the basis of our equation (1) or (4), the estimated consumption figures were lower than the actual values in postwar years. It must for the time being remain a matter of personal opinion how much of these "excesses" of actual over estimated values represented a more or less "permanent" upward shift of the consumption function on account of the great increase in the liquidity of the individuals, as Means seems to believe, and how much was due to the liquidation of "pent-up demands." The absence of a continuous "tapering off" tendency in the "excesses" obtained from equation (1) would tend to cast doubt, as pointed out by both Means and Mayer, on the interpretation of these "excesses" as reflecting the liquidation of "pent-up demands"; even though it is difficult to believe, on *a priori* grounds, that the fulfillment of such demands did not play a rôle in postwar consumption. In any case, the lack of any discussion of the liquidity factor was undoubtedly a serious error of omission in the original paper.

The essence of Mr. Mayer's criticism is that, since we do not know the

[2] The "absurd" result obtainable from equation (1) mentioned by Means (*i.e.*, consumers would "stop spending entirely if the price level were sufficiently low") is interesting but unimportant; as all statistical functions, when carried far beyond their relevant ranges, are likely to yield economically absurd results.

[3] This was one of the reasons why the consumption function in the original paper was set up in money values, instead of in real terms.

actual size of "pent-up demands," we can not say that the equation coming closer to the actual data (*i.e.*, equation 1) is a better indication of the consumption function than equation 4 when the influences of the "pent-up demands" are removed from the relationship. An assumption implicit in the original paper is of course that the liquidation of "pent-up demands" was somewhat smaller than the total postwar "excesses" in consumption, a hypothesis admittedly impossible to establish by any statistical effort at the present time.

In the discussion of the consumption function in Sections I and II in Mr. Bator's comments, he suggests that there are three possible grounds on which the absolute price level might be introduced into the consumption function: inelastic price expectations, the "Pigou effects" and "irrationality" on the part of the consumers. Since he believes that "the implication that a hypothesis of systematic 'irrationality' is subject to theoretical proof[4] is patently unacceptable," he attributes the introduction of the price level into our equation (1) to the first two factors and then proceeds to criticise the equation on this basis. The "money illusion" implied in equation (1), however, is of the "irrational" type.[5] The criticism, therefore, is not relevant.

Bator believes that "no meaningful hypothesis as to the behavior of the individual investor is being tested" in connection with our investment function, equation 2, which has gross product and profits after taxes as independent variables. If profit incentive as an explanatory variable for investment "is not grounded on a micro-economic hypothesis," one is at a loss to find another that is.[6] A serious omission occurred in the original paper in not having pointed out profits as a major source of supply of capital for investment[7] which would further reinforce the desirability of introducing profits as an independent variable in the function. The authors may perhaps be excused for their "dismissal" of the "so-called 'acceleration principle,'" as any *statistical* attempt to find the "acceleration principle" in a rigid, quantitative form, not necessarily linear and for whatever time-unit (annual, quarterly, etc.), is a dead animal unworthy of revival. On the other hand, the level of output must have influences on the demand for investment as a result of a host of reasons,[8] of which the "acceleration principle" is but one underlying consideration. It is of course extremely difficult to determine on *a priori* grounds the net result of

[4] Equation (1) represents of course an *empirical* attempt to see whether "money illusion" existed.

[5] The "money income illusion" is of the "irrational" type, as a proportional fall in both income and price will leave real income unchanged but will increase the real value of money holdings.

[6] Bator also criticizes our investment function on the ground that we failed to "assign a role to expectations (directly, or *via* lags, rates of change, etc., indirectly)." One has yet to invent a method by which expectations can be included in a statistical function *directly*. Indirectly speaking, it is not necessarily true that expectations must be associated with lags or rates of change. Expectations can be formed on the basis of current values alone.

[7] See the discussion of this point in S. C. Tsiang, "Accelerator, Theory of the Firm and the Business Cycle," *Quart. Jour. Econ.* (Aug. 1951).

[8] Tsiang, *ibid.*. especially pp. 327-31.

these influences on investment, especially aggregate investment. Under such circumstances, it is almost inevitable that one would choose the gross product as an independent variable in the function in order to reflect the influences of the level of output on investment.[9] In any case it does not seem justified to say that a relationship between investment on the one hand and the gross product and profits on the other is in the nature of what Bator called "the Baconian" inductive-statistical approach: *i.e.*, "running correlations between aggregate magnitudes with no attempt at a theoretical foundation, looking for higher and higher correlation coefficients."[10] The relatively large standard error of the profit term merely shows that the influence of profits on investment cannot be clearly segregated by statistical devices from those of the gross product; however, it does not prove the theoretical irrelevance of either the gross product or profits as an explanatory variable for investment.

Space does not permit detailed discussion of the many other interesting points raised in Bator's comment; however, the reply to some of them is already implied in the above discussion. The rest are essentially of the following kinds: a recapitulation of those desirable undertakings which we said we were not in a position to do[11] and a summary of the limitations explicitly enumerated in the original paper.[12] Since these re-enumerations help to emphasize the professed narrow scope and the highly tentative nature of the paper, they are entirely welcome.

TA-CHUNG LIU and CHING-GWAN CHANG*

[9] Even in purely theoretical analysis without any attempt at statistical verification, the absolute level of income (or that of consumption) is included as an independent variable in the investment function. For outstanding examples, see O. Lange, "The Optimum Propensity to Consume and the Rate of Interest," *Economica,* February 1938, and J. R. Hicks, "Mr. Keynes and the Classics: a Suggested Interpretation," *Econometrica,* April 1937. It is of interest to observe that A. Smithies introduced income as an independent variable in his investment function even after the rate of change of income had been included. See his "Period Analysis and Equilibrium Analysis," *Econometrica,* January 1947.

[10] Bacon himself would have objected to such a use of his name.

[11] For example, our failure to use quarterly data on account of the difficulty of applying the existing statistical technique to them, and the absence of explanation for the variation in profits. In so far as the use of the gross product instead of disposable income in the consumption function is concerned, it is a fact that the postwar relationship between these two variables was almost exactly the same as the prewar one. One merely has to substitute this relationship into the consumption function to obtain the relation between consumption and disposable income. (It should be noted that prediction is admittedly not a purpose of the original paper.) Bator also questioned the advantage of using the gross product from the computation point of view. The computation of the model given in the appendix is greatly simplified by the use of the gross product, because the introduction of disposable income would give rise to a problem of "identification" which can be solved only by the laborious process involved in the solution of a certain characteristic equation. It further simplified the computation of the consumption function in the text because the variance and covariance matrix of Y and C had already been computed in connection with the model in the appendix which was worked out first.

[12] Such as those given in connection with the application of the system.

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Price Leadership—A Reply to Mr. Oxenfeldt

In a recent issue of this *Review* Professor Oxenfeldt challenged the correctness of some conclusions I reached in an earlier article on the nature and significance of price leadership.[1] In his discussion he raised several questions that are highly relevant to the problem of framing public policy toward price leadership as an industrial practice and pointed out some of the limitations to my conclusions. His comment therefore serves as another reminder (one also appears in my own article at page 900) to the reader that we need a larger number of case studies before the stochastic laws governing the relationships among rivals in oligopolistic industries can be accurately determined.

My investigation (based upon all the published industry studies I could find) led to the following conclusions (paraphrased): (1) Dominant firm price leadership is essentially a problem in monopoly rather than oligopolistic rationalization. (2) The more common variety of barometric firm price leadership, in the absence of supporting arrangements such as zone pricing and basing point arrangements, etc., does not appear to depart seriously from competitive pricing. And (3) extreme forms of barometric price leadership, which might also be viewed as price leadership in lieu of an overt agreement, can effectively circumvent competitive forces only when five specific conditions are fulfilled. These three conclusions led in turn to a proposal that public policy be directed against the more tangible supports to price leadership rather than against price leadership as such.

With regard to extreme barometric price leadership Oxenfeldt asserts that only one of my five specific conditions is essential—the existence of oligopoly (p. 382). He argues that restricted entry, reasonably similar costs among firms, and a market demand curve not greatly exceeding unity, three of my five prerequisites, are not necessary. A fourth—that each producer must view his output as an extremely close substitute for outputs of his rivals—Oxenfeldt accepts in substance but feels that my examples "suggest that [I] exaggerate the need for product similarity" (p. 382). Since on this point we are in substantial agreement, I shall limit my discussion to the remaining three.

He rejects restrictions to entry as a prerequisite on the grounds that new entrants only "limit the gains to firms that are party to such an arrangement" and *might* have no effect on prices (p. 382) (italics supplied). It is true that my discussion did not provide for this contingency, but I am not convinced that it provides adequate grounds for playing down the importance of entry restrictions.

He rejects reasonably similar cost conditions because it "seems unnecessary analytically and also inconsistant with one of the most notorious cases [the United States Steel Corporation] of price leadership" (p. 383). Why it is

[1] A. R. Oxenfeldt, "Professor Markham on Price Leadership: Some Unanswered Questions," *Am. Econ. Rev.*, June 1952, XLII, 380-84. His comment was prompted by my article, "The Nature and Significance of Price Leadership," *ibid.*, Dec. 1951, XLI, 891-905. Except where reference to my own article is obvious, all page citations are to Oxenfeldt's comment.

unnecessary analytically is not explained. Also, before the steel industry can be used as factual grounds for dismissing reasonably similar costs as a prerequisite, it must first be demonstrated (1) that U. S. Steel, over the period its price leadership was effective, was a high cost producer; (2) that effective price leadership did not stem from U. S. Steel's dominant firm position (thereby appropriately assigning steel to the barometric firm discussion); and (3) that effective price leadership was not dependent upon any supporting price arrangements among steel producers. This I submit is a formidable task in view of the historical size of U. S. Steel and a half-century of basing point pricing.[2]

Similarly, Oxenfeldt argues that an elasticity of market demand not greatly above unity seems an unnecessary prerequisite for effective price leadership. He correctly states that the main point of my argument is that near-substitutes set an upper limit beyond which the price leader cannot carry price. I agree with him that effective price leadership could still raise price to the point where near-substitutes prevented further price increases. I also concede that without price leadership prices might be lower—whether *far* lower (as he suggests) or not, would depend on the "closeness" of the substitutes, and in turn, among other things, on the elasticity of market demand.

The difference between Oxenfeldt's position and my own on the matter of prerequisites, however, is principally a matter of degree, and not wholly beyond reconciliation. He himself concedes that four of the market features I list as prerequisites might appropriately be considered "factors conducive to price leadership" (p. 382). I do believe it necessary, however, to correct what appears to me to be a rather arbitrary construction he places upon two of my conclusions. According to him, I concluded that "barometric price leadership gives the same results as competition" (p. 384). What I in fact said was as follows: "Except for the type of price leadership discussed below [price leadership in lieu of an overt agreement] the evidence suggests that the power of the price leader to preserve price discipline derives less from his ostensible status as the barometric firm than from the more overt arrangements which support it. Where such supporting arrangements are not found, the barometric firm seems to do little more than respond to forces of competition" (p. 901).

Also, according to Oxenfeldt, I concluded that ". . . if perchance a dominant firm is an effective price leader, one need only wait a little while and new

[2] We may concede that U. S. Steel was a high cost producer over the time period in question without appreciably lessening the task. However, the testimony before the Cellar Committee, to which Oxenfeldt refers, shows less conclusively that U. S. Steel was a higher cost producer than its rivals than that U. S. Steel was not as efficient as it might have been. The testimony, based on the 200-volume Ford, Bacon, and Davis Report (not yet made public), shows that U. S. Steel's cost accounting system was highly inadequate, its plants (and some of its management) obsolete, and that U. S. Steel had lost ground to its rivals by failing to adapt its production to the newer steel using industries. A more recent treatment of the steel industry, however, shows that before World War II, the Tennessee Coal, Iron and Railroad Company, a subsidiary of U. S. Steel, was probably the lowest cost steel producer in the United States. See a forthcoming study by George W. Stocking, *Basing Point Pricing and the South.*

firms will emerge to end its dominance" (p. 384). What I in fact said was, "Price leadership in a dominant firm market is not simply a *modus operandi* designed to circumvent price competition among rival sellers but is instead an inevitable consequence of the industry's structure. Hence, the only obviously effective remedy for such monopoly pricing is to . . . dissolve, if economically and politically feasible, the dominant firm" (p. 895). I then cautioned that public policy should hardly be directed toward this end before the foundations of the dominant firm's existence had been thoroughly examined, pointing out that entry of new firms had frequently reduced the monopoly power of initial dominant firms as effectively as public policy measures could have been expected to do so. I then cited four industries in which this had been the case, and two in which it had not.

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BOOK REVIEWS

Economic Theory; General Economics

Wirtschaftlichkeitsrechnung. By ERICH SCHNEIDER. (Bern: A. Francke. Tübingen: J. C. B. Mohr (Paul Siebeck). 1951. Pp. viii, 156. DM 10.80.)

This book is essentially a German version of the author's *Investering og Rente* (Investment and Interest), published in Danish in 1944, and is one of the series of "Hand- und Lehrbücher aus dem Gebiet der Sozialwissenschaften," edited by Edgar Salin and Arthur Spiethoff.

Dr. Schneider first defines the "internal rate of interest," which is Keynes' efficiency of capital, and the "capital value" of an investment, which is Irving Fisher's "present value."[1] He then describes alternative methods by which the investor, once he has estimated the outlays and receipts attached to an investment and determined a "calculation rate of interest," can compute its profitability, and compare it with other opportunities. The methods, each of which gives the same result, so that choice is a matter of convenience, are: (1) the discount method, by which capital values are determined; (2) the internal rate of interest, or "difference" method, which involves comparison of the internal rate of interest of the differences in the outlays and receipts series of alternative investments with the calculation rate; and (3) the "annuity method," wherein the series are reduced to uniform averages. If an infinite number of investments, which vary continuously according to "one or more variable magnitudes" is available, the investor maximizes capital value by equating the marginal internal rate of interest with the calculation rate. This is possible if within the range of choice the internal rate is falling (p. 51).

Schneider thus explains, with formulae and practical examples, the application of the "'modern theory of investment" to problems of investment choice, replacement dates,[2] evaluation of existing equipment, and optimum sizes of installations and inventory purchases. This explanation is developed most carefully and with admirable clarity.

In his final chapter and in scattered sections in the earlier chapters, the author discusses in rather summary fashion problems relating to the determination of the values which enter into the calculation, and the relative significance of economic calculation among the several determinants of entrepreneurial decisions.

The calculation rate of interest is "in all cases a subjectively determined magnitude" (p. 67). If an investment is self-financed, the rate will "in general" be that rate "which is viewed as normal" in the particular industry (*ibid.*). But if borrowed capital is used, the rate will "obviously . . . be greater than the rate of interest which the investor pays . . ." (p. 66). The magnitude of the difference depends, according to the author, on what *internal* rate the

[1] *The Theory of Interest* (New York, 1930), p. 152.

[2] Much of the material relating to this problem was published in the *Weltwirtschaftliches Archiv* (1942), LV, 90 ff.

investor "wishes to realize" and the risk involved in the investment (pp. 66-67). This is confusing. The internal rate is the rate of discount which equates anticipated receipts with anticipated outlays, that is, what the investor expects or hopes, not what he might wish to achieve. The calculation rate, on the other hand, is a magnitude which the investor views as "suitable" (*angemessen*) (p. 22); but the author expressly warns (p. 128, footnote 1) against the "understandable" tendency of investors to use "too high" a calculation rate as a "safety valve."

Considerations of financing an investment can influence calculations only through their effects on the size of the calculation rate and—though they may force abandonment of an investment—are to be sharply separated from the calculation itself. Comparison, however, of options on the basis of calculations is valid, the author warns, only if choice of a more costly investment does not force the investor to forgo a profitable third investment.

Additional influences affecting investment decisions are the "imponderables" and uncertainty. Allowance for uncertainty by overly conservative estimates, Schneider says (in the cited footnote), "consciously" falsifies the results of calculations. Alternative investments must therefore be weighed, after calculations, in the light of their varying degrees of uncertainty. With respect to a single investment, differing degrees of uncertainty attached to different factors require calculations on the basis of "various thinkable assumptions" (p. 127). The investor, I think, might here be better advised to use Schneider's interesting concept (pp. 62-66) of the "critical value" of a factor, that is, the value at which, *ceteris paribus,* the capital values (profitabilities) of alternatives are equal. Having determined the critical value, the investor could consider whether the probable value would be greater or smaller than the critical value.

The author is a doughty champion of the methods he so ably develops. The imponderables, he admits, "in most cases . . . are the really decisive factors" (p. 129). Nonetheless "nothing would be more mistaken" than to conclude that "the actual calculation plays only a subordinate rôle . . . without calculation a rational decision is an impossibility" (p. 132).

The book is thus both an appeal for economic calculation and a valuable manual for its use. Though intended apparently primarily for practical use, the author's skillful "coördination" of the quantitative criteria of individual entrepreneurial decisions with "modern theory" is of definite theoretical interest.

For American use, one correction may be required. Schneider points out (pp. 95-96) the complete irrelevance of remaining book value in the determination of optimum replacement dates. This may be correct for Germany and Denmark. But in the United States the (present) capital value of the reduction in profit tax is greater if the remaining book value is used at once as a loss than if it is amortized in later years. Thus the fact of unamortized book value shifts Schneider's optimum replacement dates (pp. 81 ff.) forward.

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Economie in Zestien Bladzijden of Inleiding tot de Analytische Economie. By I. J. GOUDRIAAN. (Amsterdam: De Bussy. 1952. Pp. xxi, 249.)

Professor Goudriaan is an economist from the Netherlands, where he occupied various leading positions in industry and taught at the Institute of Technology in Delft. Recently he emigrated to South Africa and is now at the University of Pretoria. This book is intended to prove an earlier statement of his contending that "all really exact scientific truth in economics could be summarized in a little book of perhaps twelve or sixteen pages." At first sight there is a considerable discrepancy between the title of this volume *(Economics in Sixteen Pages)* and its actual size, but the title is justified by a first part which does outline the author's views in sixteen pages of small type, the remainder consisting of comments and elaborations.

The choice of subjects, and indeed the whole project, is indicative of a highly personal opinion as to the contents of economics. There are few references to economic theory in the narrow sense; modern price theory with its many ramifications is completely ignored. This is a consequence of the author's opposition to determinism and his emphasis on what he calls "indeterminate quantities," such as supply and demand on a market where speculation is dominant. He believes that economic analysis, if it is to have practical relevance, should be based on the following three axioms:

1. An action of one person, who is not bound by tradition or external compulsion, is indeterminate.

2. The aggregate of the actions of a number of persons who react independently is a stochastic variable which approaches determinateness as their number increases.

3. The aggregate of the actions of a number of persons each of whom is to an important extent conscious of the actions of many of the others is indeterminate, no matter how big that number is.

What is left of economics under these restrictions is a system of macroeconomic equations which are made meaningful by a division into sectors and various other assumptions which are claimed to be valid empirically. At this stage readers may well feel that they have to take a great deal on trust and that the author's assertions might with advantage have been supported by more detailed econometric investigations. However this may be, the model presented is of considerable interest and fits to some extent in the recent work in economic dynamics by Hicks, Harrod, Goodwin and others. Three sectors are distinguished, corresponding roughly to raw materials (quantity determinate, price indeterminate), heavy industry (both price and quantity indeterminate), branded and retail goods and services (both price and quantity determinate). The model contains a multiplier, an accelerator and autonomous investment, but the definitions are sometimes rather unusual. Much attention is paid to capacity limits as a source of instability. In accordance with the author's methodological views the model is not complete; its parameters are subject to shifts and there is no necessary sequence of upturn and downturn.

In a system of this kind there is evidently great scope for government

intervention to increase stability by making the indeterminate quantities more determinate. As regards the prices of raw materials, Goudriaan's solution is a commodity currency, as advocated in the United States by Benjamin Graham. Goudriaan's advocacy of this scheme preceded Graham's book by several years, however; one may indeed surmise that the present work was developed originally as a rationalization of his views on monetary policy, which is not of course a reflection on its merits. There is an interesting discussion of the composition and operation of a commodity reserve.

In order to stabilize the heavy industry sector the author proposes a system of deferred investment projects, calculated at a discount compared to the price for immediate execution. There would be a pool of such projects for each branch of industry and those who accept a contract would have to start work at the option of the principal. The difficulties in such a scheme are obvious and unfortunately the author's exposition is too brief to be convincing.

Economics in Sixteen Pages abounds in brilliant suggestions and persuasive arguments, and many of its ideas deserve to reach a wider audience than that to which it is now available. Its methodological claims are perhaps too much at variance with recent developments to be taken altogether seriously, especially as the author does not seem to be familiar with the present state of our science outside his chosen field of macro-economics. Neither this nor the somewhat bellicose tone in which the book is written should deter us from appreciating its real contribution to our knowledge of the economy.

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Het Systeem van de Marktvormen (The System of Market Types). By F. J. DE JONG. (Leiden: H. E. Stenfert Kroese.N. V. 1951. Pp. x, 214. *f* 14.00.)

According to Professor de Jong, the development of price theory is currently hampered by the absence of a clearly defined and universally accepted system of market models or types. He states that this obstacle was nonexistent prior to about 1930 because for the most part price theory was formulated under the assumption of "homeopolyopolie/homeopolyopsonie (plus free entry plus a nonregulated market)."

This convenient though primitive state of affairs was rudely disturbed in the early 'thirties when, building on the foundations provided by Sraffa, Mrs. Robinson, Chamberlin, and von Stackelberg made their well-known contributions. De Jong notes that neither Chamberlin nor Mrs. Robinson formulated a clear-cut system of market types. Von Stackelberg did, but used only one criterion—the number of participants in the market.

Unfortunate as this was, from de Jong's viewpoint, these three authors made matters worse (though certainly not deliberately) by each devising a nomenclature for market types that is in some respects different from that of the other two. De Jong characterizes the resulting terminological chaos as similar to the language difficulties that plagued the tower of Babel.

Praising Triffin's attempt to provide a standard terminology, de Jong proceeds to examine it critically and then proposes a system or, more precisely, a matrix of market types that he hopes will win universal acceptance.

Het Systeem van de Marktvormen begins with a description of pre-Triffin struggles to define clearly market types other than homeopolyópolie/homeopolyopsonie. This survey of the literature—a not unusual part of many continental European books in economics, no matter what the particular subject—assures the reader that the author has studied his antecedents. However, in this instance it is not merely a display of academic erudition. It provides a background that clearly illustrates some of the difficulties encountered by those who have grappled with the problem of classifying market types. Further, it enables de Jong to dispose of certain definitional matters and to set the stage for his analysis of the criteria to be employed in distinguishing various types of markets.

The first criterion "the eventual homogeneity of market and commodity," —is based upon the absolute value of the cross elasticity of demand for the product of a seller, assuming a fall in his price relative to that of his competitors. If this cross elasticity is very large (approaching infinity) for every seller vis-à-vis his competitors, homeopoly exists. If this elasticity is 0, heremopoly (isolated product) prevails. And if the cross elasticity is greater than 0 but less than infinity, heteropoly characterizes the market.

The second criterion, "the number of sellers," also utilizes the cross elasticity of demand coefficient but in this case the supply price of the individual seller is assumed to rise relative to that of all other sellers. Assuming homeopoly, for example, the individual seller is a homeoligopolist if the appropriate coefficient of the cross elasticity of demand is greater than 0. This indicates that other sellers will gain an appreciable increase in quantity demanded at their price. If the individual seller is a homeopolypolist, then the coefficient will be very nearly equal to 0, indicating that the other sellers will gain almost nothing in quantity demanded at their price. The second criterion enables de Jong to formulate five types of relationships between sellers. They are monopoly and polypolie, and three kinds of oligopoly—symmetric, asymmetric, and mixed.

By combining the classifications obtained under each of the criteria, nine market types emerge. Since the same types are applicable to both the buyers' and sellers' side of the market, there are eighty-one possible market types.

Next, de Jong compares his system with others, making an especially elaborate comparison with Fellner's. He also shows how simple it is to find equivalents in his matrix for the diverse terminology in use today.

He then goes on to indicate the relation of his market types to reality, concluding that asymmetric and mixed heteroligopoly are characteristic of the markets for industrial products and that agricultural products are sometimes sold in markets very nearly approaching homeopolypolie/homeoliogopsony. In any event, homeopolypolie can more frequently be used as a starting point for an analysis of agricultural markets while in the industrial markets heteroligopoly appears to be generally applicable.

De Jong inquires whether it is necessary to alter his market types if

changes occur in the conditions of entry or if government regulates the markets. He observes that ". . . the kinds of entry and the question of market regulation do not change the market types themselves but do change operations within them." Entry, market regulation, and market type are the three "objective circumstances" (given conditions) under which the exchanges take place in the market.

Viewed in the light of the author's objectives, *Het Systeem van de Marktvormen* is a success. Yet the reviewer was left with a vague feeling of discontent. Perhaps this was attributable to a prejudice against a taxonomic endeavor based upon dissatisfaction with other classificatory systems rather than upon the development of a theory that clearly demonstrates the relevance of the market types constructed.

Still, by providing a standard terminology and a system of precisely defined market types de Jong may well have contributed importantly to the advancement of price theory. Attempts to construct theories under his definitions may be successful. If not, they may lead to a reformulation of market types based upon other criteria. In either event, economics will gain.

WYTZE GORTER

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A Survey of Contemporary Economics. Volume II. Edited by BERNARD F. HALEY. (Homewood, Ill.: Richard D. Irwin, for the American Economic Association. 1952. Pp. ix, 474. $5.00.)

The first volume of *A Survey of Contemporary Economics* has made for itself an indispensable place in every economist's library. The second volume treats fields which were neglected in the first volume and, by adding to the completeness of the coverage, more than doubled the usefulness of the whole undertaking. Economic literature has become so specialized that the expert in one field will welcome a concise and intelligent survey of what has been going on in other fields. The second volume shows at least the same care in the selection of authors and critics and the same high scientific standards of the contributions as the first volume.

The coverage is still not quite complete. The editor mentions in the preface location theory and social security as examples of fields which are not covered. One might also ask why agriculture is treated as a separate field but not such other specific areas of economic activity as mining, manufacturing industry, construction, transportation, services, distribution, etc. I do not suggest that all these fields should have been covered—certainly not within the two volumes—but it might have helped the reader if the preface had given him some rationale of the selection. Perhaps there is room for a third volume.

The second volume again presents a systematic and balanced review of recent literature in the fields that are covered. Beyond that, the authors appraise the accomplishments, point at weak spots and gaps in the research work and identify directions in which further work would be most important. The authors were asked to present a review of and not an original treatise in

the field. The editor states in the preface that the authors, "perhaps with one exception," have exercised the requested self-restraint. He did not name the possible exception and thus the reader is left with the teasing task of guessing which contributor the editor had in mind.

Even though no prize is offered in this quiz, the reviewer is rash enough to volunteer a guess. He would name Baran's article on "National Economic Planning" as the possible exception to which the editor alluded. Baran's is a provocative essay but not a balanced review of the literature in the field. The author cannot do justice to "Planning under Advanced Capitalism" (and that includes full employment and economic stabilization policy) because he believes that the most promising methods of a full employment policy are incompatible with the controlling interests in capitalistic society. This thesis follows from an extremely narrow theory of class interests and the state. Baran seems to reach the conclusion that a government that tackles the problem of instability under capitalistic institutions is bound either to compromise its objectives or to become fascist. Thus, besides fascism, socialism is the only realistic alternative to large-scale unemployment. For empirical proof, Germany is cited as a case in which "big business dominated the policies of the . . . fascist state." Even though the author claims that this is one of the few matters of "general consensus" among the observers, I question both the alleged fact and the logic of the argument. I find it useful for the reader to become acquainted with this very significant inversion of the "road to serfdom" argument but I cannot recognize this essay as a balanced appraisal of the work done in this most crucial area of economics.

The two official critics of Baran's essay, J. K. Galbraith and Adolph Lowe, express their uneasiness about some of these conclusions. What is called for in this case, however, are not a few polite paragraphs combining praise with some disagreement, but a full-length exposition of an open-minded approach to the theoretical and practical work done in the field of employment and stabilization policy.[1]

I have singled out Baran's article because it is one of the most interesting contributions, but, at the same time, the only piece in the volume which fails to give the reader a balanced survey of the contemporary work. In some other cases, gaps in the treatment by the authors are brought to the readers' attention by the critics.

The reviewer is tempted also to single out some of the essays for special praise. Certain articles are outstanding in judicious selection and readable presentation of the work done in complex fields. Emphasizing that this is a subjective judgment, I would like to mention Moses Abramovitz's "Economics of Growth" and Ruth Mack's "Economics of Consumption" as particularly useful contributions.

[1] William Fellner's article on Employment Theory and Arthur Smithies' article on Federal Budgeting and Fiscal Policy in Volume I contribute to the topic but do not focus on stabilization policies.

Yet there is still another thought that is haunting this reviewer. The book is written by economists for economists who want to inform themselves of what is going on in a field in which they have not specialized. This it does in a wholly satisfactory manner. But what if, by some mishap, the book should fall into the hands of a physicist, or a business man, or a trade union official, or just some layman who is concerned about the economic problems of modern society and who wants to learn about the contribution economics is making to their solution? I am afraid these laymen would not gain the impression that economics is making a very constructive contribution to the problems of our time.

Is this a criticism of editor and authors or does the volume correctly reflect an unfortunate state of our science? Could we say that the editors of both volumes have defined economics too narrowly, *i.e.*, as what may be called "academic" economics, and have neglected some relevant developments which have taken place outside "academic" economics? Of course, the academic teacher is supposed to be familiar with the research work done by workers outside as well as inside academic institutions. In addition, of the authors and critics who contributed to the volume, almost one-half are, or were, associated with a research organization (the National Bureau is particularly well represented) or with some government research work. Furthermore, the editor made a very commendable effort to have the writers review the methods actually used in economic research. Richard Ruggles' "Methodological Developments" offers a good appraisal of the value of the mathematical and econometric method and the usefulness of social accounting. Yet only a very few paragraphs are devoted to a review of the way in which these and other methods are actually used by those who are struggling for solutions of the many urgent economic problems. It would have been of interest if Ruggles had given us a survey of the methods through which economics responded to the various problems with which it was confronted in recent times and which it was not adequately equipped to handle.

Government has been faced with new responsibilities for economic stabilization, and it would be of interest to appraise the methods of research used in discharge of their functions by such government agencies as the Council of Economic Advisers and the staff of the Joint Committee on the Economic Report.[2] Economists confronted with testing the feasibility of mobilization plans or with strategic target analysis have had to develop new research methods. Government officials concerned with the development of public enterprises, such as water development projects, have been looking for standards and criteria for the selection and determination of government programs. Large corporations have felt the need to embark on long-range investment planning and have turned to economists for developing appropriate analytical methods. International organizations have been concerned with judging, for instance, the international distribution of the defense burden (North Atlantic

[2] The work of the Council is mentioned incidentally in one footnote of the text. Irrespective of whether or not one agrees with the work of these agencies, I feel that an appraisal of the research methods they have developed belongs in a Survey of Contemporary Economics.

Treaty Organization) and with other problems of resource allocation which have raised very fundamental questions.

Perhaps some of the methods actually used fall under the verdict of Stigler, quoted by Ruggles, that the recent past was a period "of clever gadget and the plausible surmise—the age of the easy answer." Whatever the value of the methods used, they belong to contemporary economics at least as much as the methods used in learned debates.

The development of a science always must be understood in terms of the stimuli operating in two different directions. There is first the "academic" level of science itself. Existing theories are re-examined by each new generation of students; some theories are found defective and improved or supplanted by other theories. That is "orderly" scientific progress. There are, however, also the impulses coming from historical events which cannot be adequately tackled with the analytical tools developed in the past. When the basic assumptions on which former theories were built are no longer valid, new approaches must be developed, so to speak, on the spot. One may debate whether the science of economics has or has not responded well to the great challenge of our time. One may debate whether the methods developed "on the spot" are really new or are adaptations of conventional tools, or are only props used by "fake" economists. In any case, this survey of contemporary economics does not convey to the reader the dramatic fact that economics today is tested on many fronts and that the tools of economic analysis are built or rebuilt as they are used or, possibly in some cases, misused.

Also, under the subject of *Welfare Economics,* there is a great discrepancy between the "academic" discussion and what I may call welfare economics "in action." Boulding's survey of the "academic" discussion is in itself a gem of clear and incisive presentation of a highly abstract and complex topic. His conclusion that welfare economics as a field of economics is bound to founder and must be replaced by a broader approach of social and economic ethics is impregnable. When he comes to discuss the contribution of welfare economics to economic policy he winds up with the understatement that "the record is not too encouraging." Some readers may be reminded of the parable of the medical authorities who, when called upon for help in an epidemic, began their work by debating the question as to how they could decide whether the life of the diseased was worth saving.

In the work of economics, it is often necessary to proceed on the basis of working hypotheses. The economist has constantly to relate his work to some, perhaps only vaguely defined, system of values as it grows out of the society and the time in which he lives. When decisions are to be made on allocation of scarce resources, when standards are developed for health or education, when judgments are made about the degree of freedom and control which appears tolerable—in all these cases, the economist is called upon to provide some basis for the aid of those who have to make the decisions. There is, I am sure, some relationship between this welfare economics in action and the welfare economics in the academic definition of the term. I think that in a Survey of Contemporary Economics it would have been of interest if the more abstract treatment had been related to these working hypotheses of welfare

economics. In this perspective the record might not have appeared quite as discouraging as stated by Boulding.

Both Ruggles and Boulding are certainly aware of the methods and the working hypotheses that must be used by the economists on the firing line but somehow or other the authors of this volume apparently felt that they should stay in the rarefied atmosphere of academic economics and not let the reader come too close to the smell of blood and sweat emanating from the battlefront. But I wish to emphasize again that the volume is extremely successful in reviewing the state of economics as it is usually defined.

GERHARD COLM

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Vollbeschäftigung Inflation und Planwirtschaft. By A. AMONN, L. BAUDIN, C. BRESCIANI-TURRONI, H. S. ELLIS, W. EUCKEN, F. A. HAYEK, J. JEWKES, C. IVERSEN, F. A. LUTZ, W. RÖPKE, and J. VINER. (Erlenbach-Zurich: Eugen Rentsch. 1951. Pp. 361. Sw.fr. or DM 15.50.)

The passing of fifteen years since the publication of Keynes' *General Theory* should be enough, especially in our rapidly moving age, to provide the perspective necessary for an objective appraisal of Keynes' influence on economic policy. The desirability of having such an appraisal needs no stressing. Keynes had a profound influence on wartime and postwar economic policies in many countries; and in the course of applying these policies many difficulties were encountered, mistakes committed, and unexpected and undesired consequences brought about. A critical appraisal of this experience, a comparison of it with the experience of countries that employed more orthodox policies, and a modification, in the light of all this, of our principles of economic policy—this is the task undertaken in the book under review.

The eleven authors, whose essays constitute the book, represent seven countries, of which three were and four were not influenced in their postwar economic policies by Keynes' teaching. The group, which contains many distinguished names from both sides of the Atlantic, was in an exceptionally favorable position for an appraisal of Keynes' influence. Indeed, many of the papers give accounts of postwar economic policies and specific aspects of such policies; and most of the papers, considered by themselves, are important, interesting, and well worth reading. But judged as a whole, the book fails, and fails fairly completely, to accomplish what it professedly set out to do.

For this there are a variety of reasons, the most important of which is the principle on which the contributors were selected. Every book must have some unifying principle; and this book has neither the unity of the *Festschrift,* whose authors have a great teacher and his influence in common, nor that of the books made familiar to us by the able editorship of Seymour Harris, in which different authors discuss the same subject in its different aspects or from different points of view. The publisher's announcement that the book deals with Keynes' doctrines is somewhat misleading—a fact which this reviewer first suspected when he saw in the index the names of Lycurgus and Lysenko and found Senator Paul Douglas rubbing shoulders with Diocletian

and (thanks to German spelling) Dschingis Khan. Indeed, three articles (Baudin, Jewkes, and practically all of Eucken) are concerned solely with planning and its evils (hence Genghis Khan); and their only connection with Keynes is that according to some of the contributors full-fledged planning is the inevitable consequence of Keynesian employment policy.

The bond that holds the book together is that all its authors are concerned with some form of economic policy, and that each author is against whichever form of economic policy he is discussing. This is a very loose unifying principle and—to judge by the evidence of this volume—a very unsatisfactory one. To begin with, the negative attitude of all the authors is likely to arouse the reader's suspicion that the book is biased; and this suspicion may well keep from reading it all but those who share its opinions to begin with. Secondly, dealing with several vast subjects, the book inevitably spreads itself thin; and, with the editors' dislike of planning apparently extended even to the coordination of the different contributions, there is much repetition and overlapping, which make the substance of the book even thinner. Statements of opinion abound and are too often repeated, while arguments to substantiate them are few and far between. Thirdly, with contributors chosen for their uniformly negative attitude toward different economic policies, the reader is almost certain to impute to them a negative attitude towards *all* economic policies and an altogether greater uniformity of opinions and attitudes than is, in fact, justified. Readers will gain a false impression of the opinions of some of the authors—an especially unfortunate result, because a subsidiary aim of the book is to acquaint Swiss and German readers with the opinions of foreign economists.[1] Also, a few of the authors betray bias by making extreme or emotionally charged statements; and readers may well impute this bias indiscriminately to all the authors.

Let me quote two of the statements I have in mind. (1) The introduction has this to say about the United Nations report on *National and International Measures for Full Employment:* "We have lived to see Keynesianism driven to its logical extreme in the form of an official document which advocates, in all seriousness, the international application of Hitlerite economic methods for the safeguarding of the free world. It is no exaggeration to regard the U.N. report as the advocacy of an international program for safeguarding freedom by means of unlimited coercion by the state" (p.15). (2) In an article tracing the historical origins and causes of economic planning, Baudin cites as an important cause, "man's excessive pride. The individual is no longer content with his having gained far-reaching mastery over the forces of nature; drunk with power,[2] he believes that he can also overcome the natural laws [of the

[1] To give an example, in this volume Jewkes castigates the pricing policy of Britain's nationalized industries and generally makes clear that he is no friend of economic planning. Yet, he is far from being an anti-Keynesian. In fact, on the basis of the relevant parts of his *Ordeal by Planning,* he might be labelled a Keynesian by some of the other contributors to this volume. Those, however, who make his acquaintance through this volume would never suspect this—as indeed they might never suspect the existence of economists devoted to freedom and yet sympathetic to Keynes and his ideas.

[2] In seinem Machtrausch.

market], which the Physiocrats discovered" (p. 69). The book has important and interesting things to say on both subjects; but statements like these are not likely to enhance the reader's confidence in its objectivity.

The negative attitude of the book accounts for its failure in yet another way. In the chapters dealing with Keynes' influence, Lutz gives a good discussion of the cumbersomeness of fiscal policy in the United States and the consequent difficulty of navigating between the Scylla of unemployment and Charybdis of inflation; Ellis deplores the abandonment of monetary policy in favor of fiscal policy and direct controls; Bresciani-Turroni points to the inadequacy of Keynesian analysis and remedies for dealing with Italy's unemployment problem; Hayek presents the important argument that full employment policies interfere with the proper allocation of labor among different industries, suggesting that Britain's employment policy retarded the adjustment of her economy to the changed requirements of the postwar world; and several contributors (especially Amonn, Hayek, Iversen, Lutz, and Viner) argue, what is perhaps the main theme of the book, that a full employment policy inevitably leads to inflationary pressures and direct controls to contain them, and that these controls in turn inevitably lower efficiency, stifle initiative, and destroy freedom.

These topics are among the main economic problems of our day; and their discussion is well worth while, provided it contributes to their solution. But the majority of the authors take a completely negative attitude. In some of the papers this is natural and called for by limitations of space or the particular way in which the author posed his problem; but in others it is not natural; and it is these others which, with their stronger language, set the tone of the entire book. The main thesis that emerges is that periodic unemployment is inevitable under *laisser faire,* whereas the loss of personal freedom, initiative, and efficiency is inevitable under a full-employment policy; and since unemployment is the lesser evil of the two, we should unlearn the lessons Keynes taught us and abandon all full-employment policies.[3] Faced with these as the only alternatives, most people would probably accept the conclusion; but this book fails to convince the reader that there are no other alternatives. None of the papers explores the middle ground, none of the authors even asks the question whether we could not learn from past mistakes and develop an employment policy that would avoid the evil consequences of inflation, direct controls, and the loss of freedom. It may yet prove true that there is indeed no middle ground between the two extremes; but the book under review seems to jump to this unpleasant conclusion rather than reach it as a result of analysis.

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[3] It is impossible to tell whether this complete rejection of Keynesian policies implies a rejection also of Keynesian analysis. The only statement on this subject is made by Hayek, who refers to Keynes' employment theory as ". . . a carefully thought out, yet probably erroneous theory . . ." (p. 196).

Application of Linear Programming to the Theory of the Firm—Including an Analysis of Monopolistic Firms by Non-Linear Programming. By ROBERT DORFMAN. Bureau of Business and Economic Research, University of California. (Berkeley and Los Angeles: University of California Press. 1951. Pp ix, 98. $3.50.)

Linear programming, something of a mystery to all except the increasing band of its advocates, now invades one of the central areas of economic theory—the theory of the firm under static conditions—thus hastening the day when those still uninitiated must come to terms with it. The first question they must ask is what linear programming is, what its distinguishing features are. Then they must ask where it is applicable, what it can contribute, and whether it will supplant competitors. Those who would make a start on answering such questions can do no better than to read the first and last (4th) chapters of this little monograph by Robert Dorfman. The heart of the book lies, however, in the second and third chapters which set forth the mathematics of linear programming for the competitive and the monopolistic firm, some of whose factors are fixed in amount. These central chapters were not written for those whose mathematical equipment is too meagre to include facility in matrix algebra, although their brevity will be approved by econometricians. To the present reviewer, whose competence in mathematics falls far short of what is desirable these days, it seems unfortunate that this volume provides only part of a bridge to a nearby peninsula of linear programming, when more pages might have attempted to carry nonmathematicians to the shore of that strange land.

The problem which Dorfman attacks is that of defining an optimum production program for a firm which possesses fixed quantities of certain factors and has open to it various production processes in each of which the proportions of factors are fixed but the scale of which is variable. A firm's optimum program is obtained by combining available processes at appropriate (positive or zero) levels. The mathematics of the solution constitutes the core of the book; it involves maximization of a linear function for competition and of a quadratic function of process levels for monopoly. The assumptions underlying linear programming are discussed briefly in the final chapter, perhaps too briefly at least in the case of linearity (constant returns to scale for each individual process). The problem of uncertainty is not treated but is left to the further development of stochastic models.

The relationships indicated between linear programming and the usual marginal analysis of the firm call for comment. Sometimes the argument stresses the differences between the two approaches and the superiority of linear programming, as, for example, "The type of decision which faces a firm using industrial processes is, therefore, essentially different from the decisions contemplated by the marginal analysis" (p. 11), and, "For the study of decisions in such an industrial milieu, an analytic apparatus is required whose structure parallels the structure of the decisions to be analyzed" (p. 11). Linear programming is said to be designed for situations where the choices are among combinations of discrete processes, affecting the inputs in a group simultaneously, whereas marginal analysis requires differentiability

of product, revenue and cost functions with respect to each input and output independently, and applies only if individual inputs are continuously variable. It should be said, however, that production sometimes admits of groups of processes which are such that within each group processes differ relatively little from each other (approximating continuous substitution within a certain range), and between groups substantial differences obtain.

At times the book seems to stress the similarity of the two approaches. Sometimes the difference between them is a matter of using different language to represent the same situation (p. 18). Despite seemingly rigid technical assumptions, linear programming can approximate any degree of substitutability by the introduction of a large enough number of processes which differ from each other only slightly (pp. 83-84), and in any case provides continuous substitutability between "scarce" factors (up to certain limits) by varying the relative intensities of different processes. The linear programming approach can, then, handle the case of continuously variable proportions, but some persons may feel that it is straining the usefulness of the technique to regard continuous changes in factor proportions as substitution of one fixed-proportion process of production for another.

In the end the author concludes that linear programming and the marginal analysis are theories each of which can be applied to two types of decisions (exemplified by the farmer's choice of crops and his choice of methods of growing them), but that each approach should be used in connection with the decision for whose analysis it is better adapted (pp. 84-85; see also pp. 87-90 for further distinction of the problems to which each is suited). In addition, the claim is made that linear programming is a superior technique because it is practical and deals with concepts more familiar to business and more readily measurable than those of marginal analysis (p. 80). This does not mean, however, that the typical entrepreneur can follow the mathematical procedure outlined any more than he can employ the usual analysis in terms of the calculus. It means that the entrepreneur thinks not in terms of how much of each factor to use, but in terms of the extent to which he will use an available process of production.

An inadequate explanation is given of the rôle of factor prices in the analysis. After pointing out that linear programming is concerned, like conventional theory, with efficient allocation of scarce resources, Dorfman adds, "Unlike conventional theory, however, linear programming appears to arrive at an optimum allocation without recourse to the concept of price" (p. 45). He thereupon discusses the imputation of values to the fixed factors, and shows that the mathematics involved is similar to that involved in the optimization problem already solved. However, this discussion of the imputation problem is not an adequate substitute for a clear explanation of how the prices of fixed and variable factors affect the optimum program. The prices paid for the fixed factors are fixed costs in the short run and are, therefore, (properly) disregarded in the determination of the short-run optimum program, which is the problem with which the book deals. Moreover, the static nature of the analysis makes it necessary to rule out, though the author nowhere makes this

explicit, the possibility that the optimum program might be different if some of the factors whose short-run supply is absolutely limited could be used, perhaps to better advantage, in later production program periods. As for the variable factors, their prices are taken into account in defining the unit level of a process as that which yields a dollar of revenue above the costs of the variable factors used. There is no discussion, however, of the manner in which a change in relative prices of factors would affect the optimum program by affecting the relative net revenues of various processes. The omission may result in a false impression of the rôle of factor prices in the optimization problem. A more complete statement of the economics of the firm in the short run under static conditions would have to deal explicitly with the effect upon the optimum program of different relative prices of variable factors.

The volume merits attention, whether the mathematicians have any quarrel with it or not.

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The Industrial Economy: Its Technological Basis and Institutional Destiny. By CLARENCE E. AYRES. (Boston: Houghton Mifflin. 1952. Pp. x, 433. $4.00.)

This unusual volume is designed as either text or supplement for an introductory course in economics. It avowedly and actually reflects two distinct approaches. The first is that it is inappropriate to present beginners with merely the alternative explanations of disputed points. Since beginners can hardly be expected to make firm and wise decisions where the experts are uncertain, the text, while recognizing the controversy openly, should take and present an honest stand. If the prospective user of this text likes this basic method, he will be particularly interested in the points of view which Mr. Ayres chooses to espouse, which are taken up later in the review.

Secondly, the book is a self-proclaimed "institutionalist" approach to introductory economics, and bears little resemblance in content, method, or conclusions to traditional texts. For example, in this text history and sociology participate more or less equally with economics in explaining the phenomena usually explained in economic terms, at times almost displacing economic reasoning. The desirability of such an approach depends in large measure on the school curriculum, particularly the extent to which the students take other courses in social sciences.

The plan or organization of the book also represents a conscious and drastic change from the usual method in college-level texts. After several chapters of background material, the volume consists almost entirely of discussions of some economic problems, introducing only such economic concepts and principles as are directly required for those problems. Thus the subjects of banking and the monetary system become subdivisions of a chapter on deficit financing, and taxation appears in the rôle of a tool in planning and economic stabilization. The other problems examined (as shown by chapter headings) are economic instability, its relation to war, social security, public works,

the general welfare, freedom and power, and the destiny of industrial society. This approach results in the deliberate omission of much that is included in the usual text.

The general impression is given that there are two groups of economists. The one consists of Ayres, assisted by Veblen, Keynes, and the Brookings Institution; the other consists of all other economists, from Adam Smith onward. The teachings of the second group constitute the obvious error, to which the truths found by the first group stand in bold contrast. Presentation of various ideas often proceeds by setting up the erroneous teachings, as straw men, and tearing them down. The method is apparently used with awareness that it will annoy most economists, but would seem to this reviewer to be somewhat tiresome to college students as well. It is alleged to have been well received in the classroom, probably due to the success of the author as a teacher.

As to the validity of the reasoning and conclusions of the book, this reviewer feels he can most fairly and accurately convey a sense of the book's merits by some quotations or paraphrases. Care has been exercised to make these reproduce faithfully both the "feel" and the quality of reasoning of the whole. For convenience, the citations carry page references to the original.

1. "Thus even today we continually talk of extending the 'advantages' of education to all our youth, although it is quite evident that education confers an advantage only on individuals who get more out of it than other individuals and would cease to be an advantage if all got the same amount" (p. 114).

2. Ayres refers to a concept as introduced by Adam Smith and still accepted by "[orthodox] economists" that specialization and division of labor are limited by the width of the market. This is equivalent to saying "that commerce is primary, and that industry is secondary and derivative. . . . This proposition is ridiculous. . . . The exact opposite of this proposition is clearly and incontestably true." Clearly, what enters the market must be made before it can be bought and sold. (Pp. 88-89)

3. The "supposition that 'labor' is the sole creative agent of industrial production" is presented for analysis. The complete refutation occupies a moderate sized paragraph, and is accomplished by the single and original ingenious device of pointing out that "even some very big businessmen work hard and perform important and even indispensable functions of organization and decision." Ayres does not stoop to the traditional method of alleging that other factors of production might also contribute. (Pp. 91-92)

4. In thinking of depression, "the question, 'What becomes of all that money?' is certain to arise in the mind of the reader. No one knows where all of it goes." Ayres offers three suggestions: part goes into hoarding, part into buying inflated securities, and part goes abroad. Mr. Ayres' original approach is again reflected in his omission of the cliché that most economists would have suggested here—that of credit contraction. (Pp. 143-144)

5. Discussion of the quantity theory of money constitutes a noteworthy contribution to monetary theory. He denies that large amounts of money in circulation are a causal factor in inflation. The oft-cited cases of "'galloping

inflation' " in Germany and China did not result from increases in the quantity of money. As "only brief reflection" will show, it is "obvious and undeniable" that the inflation resulted rather "because the existing government [was] 'coming apart at the seams'" (p. 241). Similarly, if money were to be sprinkled from airplanes, it would not be the quantity of money which would cause inflation, but the way in which it was distributed. In this case the method would "spread the conviction throughout the community that its government was crazy; and this might lead to 'galloping inflation'" (p. 243).

6. "All economic thinking postulates planning, and has always done so" (p. 186).

7. "A military program of any kind . . . makes no contribution whatever to the productive capacity of the economy" (p. 178). But "a military program does indeed act as an economic stabilizer" (p. 179).

8. "A 'capitalist' . . . is one who by virtue of possession and exercise of money power is believed to be an agent of industrial progress" (p. 120). This is the only definition of this term given.

9. Mr. Ayres rejects the idea that capital, as savings out of past production, makes any contribution to production. "The truth is, we have known for some time that economic growth is self-financing." New projects can be financed by creating money "quite literally, out of thin air." The existence of the new plants then itself justifies the creation of the money. (Pp. 114-117)

This collection of excerpts, which could easily be multiplied several times in the same vein, makes it clear that Ayres is on sound ground when he refers to "a formidable body of economic thinking from which this book is a departure." As noted previously, this characterization of the book by the author himself, applies equally well to its over-all organization.

ALFRED KUHN

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A Scholar in Action—Edwin F. Gay. By HERBERT HEATON. (Cambridge: Harvard University Press. 1952. Pp. vii, 260. $4.25.)

Rare indeed is the great scholar and teacher who becomes the subject of a discerning and inspiring biography. Such is the lot of Edwin F. Gay, one of Harvard's most famous economic historians. *Festschrifts*, often containing disjointed papers of varied value, are fairly common, and indeed Gay was presented with one of these in 1932. It is quite another thing to be able to enter into the inner mental life of a first-rate intellect. This Professor Heaton has enabled us to do in a book of unusual charm prepared for the Friends of Edwin F. Gay. Fortunately, Gay was a careful note taker, an indefatigable letter writer, a diarist, and a man of affairs, and from the voluminous records remaining the author has found ample material with which to work. Because of Heaton's vivid and understanding treatment of the problems which beset the student and scholar along his path from the beginning of graduate work to the achieving of the status of emeritus professor, or "grand old man," this study should appeal to younger men seeking to make careers in economics as well as to those who sat under Gay or otherwise came under his influence.

Edwin Francis Gay (1867-1946) had one of the most remarkable careers

in American economics and academic business administration in the first half of the present century. After completing his undergraduate work at Michigan he spent over twelve years in graduate study, financed by a small inheritance, in the great universities of Germany, Italy, Switzerland, and England. Starting as a student of mediaeval ecclesiastical history, he concluded with the study of economics and economic history, in which he came particularly under the influence of Wagner and Schmoller. To many American professors whose graduate work has been narrowly specialized and whose degrees have come with the speed and certainty of an assembly line, Heaton's chapter on "A Scholar in the Making" will make fascinating reading. It was Gay's long and diverse wandering in many fields of knowledge in many countries which was later to give his lectures such great scope and brilliance.

Heaton's treatment of Gay's career is equally rewarding. First we sample the trials and uncertainties of the young instructor and junior professor on the Harvard economics staff, to which he was appointed in 1902 and of which he ultimately became acting chairman. More interesting is the account of his years as the first dean of the Harvard Graduate School of Business Administration, 1908-17, a post which called for promotion, programming in an untried field, recruitment of a new type of personnel, and superb begging. The author has scarcely scratched the surface of the history of the transformation of business from an art to a profession, but his comments on Gay's objectives and program will be valuable to those interested in training young men for active careers in business. It is interesting to note that although he had no business experience, a fact which he deplored, his broad training in Germany, where academic study and practical administration were more closely allied than in the United States, fitted him well for this post.

There followed still more active years. In World War I, Gay became director of the important Division of Planning and Statistics of the Shipping Board, and later a member of the Board. He also was made a member of the War Trade Board, and finally acted as organizer and director of the Central Bureau of Planning and Statistics. These were important positions in which Gay attempted to bring rationality, singleness of purpose, and statistical control into the war effort. The author has vividly described the cross-currents, conflicts, and frustrations of that period in terms meaningful to those familiar with similar recent experience. The passages on the struggle to eliminate unnecessary but profitable commercial cargo movements and thus free ships for allocation to the military are especially good. Following the war, Gay was invited by T. W. Lamont to take over the position of editor and business manager of the New York *Evening Post,* a declining and nearly bankrupt newspaper. In this task of rehabilitation Gay was unsuccessful, at least by financial standards. The author deals critically and fairly with this somewhat painful episode. Then in 1924 came Gay's return to the Harvard "squirrel cage" as professor of economic history. As side interests, of which Gay had many, we got glimpses of his activities as one of the founders of the National Bureau of Economic Research and of the Council on Foreign Relations. From all this we see what Heaton means by "A Scholar in Action."

Among the interesting passages are those in which the author comments on

Gay's failure to produce any book, and on his fatal dual love for pure research and active life, with the consequent inability to get down to writing. The book also raises many questions about the adequacy of both European and American advanced training for the type of active life followed by Gay. Thus on many accounts this is a thought-provoking study which should be of great interest to the profession.

JOHN G. B. HUTCHINS

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Catalogue of Adam Smith's Library. Edited by TADAO YANAIHARA. (Tokyo: Iwanami Shoten. 1951. Pp. ix, 126. Yen 350.)

The titles of the books in Adam Smith's personal library have been of especial interest to students of economic thought since they were first catalogued by James Bonar in 1894 for the Economic Club (*A Catalogue of the Library of Adam Smith,* London, Macmillan and Company, 1894). A second edition prepared by Bonar in 1932 for the Royal Economic Society was superior to the first edition both in accuracy and in coverage.

It is familiar knowledge that Smith's personal library was willed to his cousin, David Douglas, later Lord Reston. Lord Reston willed the books to his two daughters, Mrs. Bannerman of Edinburgh and Mrs. Cunningham of Prestonpans. The Bannerman collection has remained intact and is now at the University of Glasgow. The Cunningham collection was divided and the largest portion went to Professor R. O. Cunningham, once on the staff of Queens College, Belfast, who presented a number of Smith's books to the college. After his death in 1918 a large number of his own books, including some with the Adam Smith bookplate, were put up for sale. The volume under consideration deals with a portion of the Cunningham collection.

In 1920 Professor Inazo Nitobe bought in London the advertised list of Smith's books offered for sale by the Cunningham estate, and presented them to the Faculty of Economics, University of Tokyo. The titles of the Japanese-owned books were identified by Bonar in his *Catalogue* with the letter, "J." Although the Bonar compilation is quite accurate, subsequent corrections have been made in some of the items.[1] Bonar, in preparing the Catalogue, had to depend upon the list supplied by Professor Kawai which was not completely accurate. In the second edition of the Catalogue he was able to add some 20 items and make additional corrections.

One item in the Bonar *Catalogue* intrigued not only the editor but many others. In the second edition there appears the entry, "A Catalogue of Books belonging to A.S. [*sic*] 1761, f.4 1" (p. 174). Bonar referred to this item as "one of unique value." He further adds, "This list made either for or by Adam Smith himself, would show what was in his library at that date, when

[1] Claude Jones, "Adam Smith's Library—some Additions," Economic History Supplement, *Econ. Jour.,* June 1940, IV.

C. J. MacGarvey, "Notes on Adam Smith's Library and the Bonar Catalogue of 1932," *Econ. Jour.,* June 1949, 259 *et seq.*

he was Professor at Glasgow and had published the Moral Sentiments, but no book in economics" (p. 214). The item has aroused the curiosity of many British and American scholars. Dr. Bonar himself states, "Perhaps our Japanese friends will satisfy our curiosity in this matter" (p. 214). The mystery of the date of publication was cleared up by the late Professor W. R. Scott of the Univerity of Glasgow who secured a photographic copy of the manuscript and discovered that the date was 1781 instead of 1761.[2] The mystery of the contents of the volume has been cleared by "our Japanese friends" in the volume under review, which supplies the missing information on the contents of the Smith library and presents the final corrections to the Bonar list of the books in Japan. The Faculty of Economics collection includes 141 books or entries (308 volumes) of which 62 books or entries (98 volumes) are in English, 34 books or entries (43 volumes) in Latin, 28 books or entries (92 volumes) in French, 15 books (73 volumes) in Italian and 2 books (2 volumes) in German. The subjects cover a wide range of philosophy, literature and poetry, politics, history, geography, religion, natural history, art, language, mathematics, etc., but there is no book on economics save Smith's own chief work and a German translation thereof.

An appendix, which is probably of greater interest, reveals for the first time the contents of the item, "Catalogue of Books belonging to Adam Smith, Esquire, 1781." This was prepared by or for Smith and written in longhand not by Smith but probably by a clerk. It contains about 1120 books or entries (2300 volumes). Professor Yanaihara has carefully checked and listed the page reference for each item against the Bonar *Catalogue*. The student will discover that many items in the catalogue of 1781 do not appear in the Bonar volume.

Smith used a curious method of identifying and locating his books in what he called, "Divisions." The 87 sheets of the handwritten book list the items as they were located in his own book cases such as in the "Upper Row" or "Lying on the Top," "Left Hand Book Case, Shelf 1st," "Right Hand Book Case, Second front Row," "Book in Locked Press Left Hand Window Book Case" and so on. The entries are brief and contain only the name of the book, number of volumes if more than one, but no date or place of publication.

In making this information available to the world of scholars "our Japanese friends" have rendered a distinct service. Persons owning books with the familiar Adam Smith bookplate will be able to authenticate the volumes by referring to the Japanese publication. The complete list of Smith's volumes provides an excellent view of the materials which influenced his own thinking and which were of current interest in the eighteenth century.

J. F. Bell

University of Illinois

[2] W. R. Scott, *Adam Smith as Student and Professor* (Glasgow, 1937), pp. 172, 390, LIX.

Economic History; National Economies

A Concise Economic History of Britain, From Earliest Times to A.D. 1750. By SIR JOHN CLAPHAM. (Cambridge: Cambridge University Press. 1949. Pp. xv, 323.)

Sir John Clapham's last years were occupied not only with his history of the Bank of England but also in writing an elementary general economic history of Britain. This volume, taking the story to 1750, was virtually completed at the time of his death. The final volume, barely begun by Clapham, has been turned over for completion to W. H. B. Court. The fact that the two volumes represent largely a formalization and development from Clapham's famous lectures, which Cambridge heard for more than a quarter century, makes Court's task the more possible. John Saltmarsh, Clapham's pupil and colleague at King's College, has seen the present volume from typescript to final text with evident care and sympathy.

Elementary teaching and writing, taken seriously, is a more rigorous discipline than common thought would allow. It forces the teacher to set out his views on the large issues and to reveal in his proportioning and emphasis the fundamentals of his thought. No single work of Clapham's exposes more clearly than this volume the character of his contribution and interest in economic history.

The generation of economic historians before Clapham, notably the Germans, Cunningham, Rogers, and the Fabians, were all reacting, in different ways, to the dominance of classical economics over public policy. They were pamphleteering, in a sense, against the internationalist, free-trade, and domestic laissez-faire biases built into the formal assumptions of economic theory as conventionally formulated, say, between 1815 and 1870. Clapham was not wholly disloyal to this tradition in the second generation of which he was so commanding a figure. His famous "empty boxes" article, on the inadequacy of the Marshallian treatment of the cases of increasing and decreasing returns in particular industries, was certainly one of the more pertinent and effective interventions of an historian in economic theory. His principal concern, however, was not to set the economists straight or to influence public policy in any direct way. He aimed to tell the story of how British men and women earned their living over the centuries. If any dominating motivation comes through Clapham's work, it is a profound affection in detail for England and those who made their lives within it; even the Irish, Scotch, and Welsh are a little foreign to him. And there is no more eloquent statement of the dignity of economic history as a means of tribute to land and people than the one-page introduction to this volume.

The directness and even literalness of Clapham's interest in the economic process made him primarily an historian of the techniques and organization of production and trade. He is a narrator of the changing state of the economic arts, and of the institutions which incorporate them. He set out to establish how things were produced and traded, rather than why. Read closely, it is evident that Clapham speculated on the major issues of causation in British economic history; but his wisdom is articulated implicitly, within

austere self-imposed limitations, and embedded cryptically in observations on particular situations. Clapham's dislike of abstraction, which contributes to a rare strength and justness in his prose, also narrowed the range of materials and problems with which he was prepared to deal.

The present volume starts with brief chapters on prehistoric Britain, the Roman era, and the Saxons and Normans. With remarkable economy he summarizes the nature of the evidence available to the historian, and then sketches the character of the British economy in terms of agricultural techniques and land-holding institutions, the extent and methods of nonagricultural production, and the character of foreign trade, if any. Then follow the two major sections of the book, running, respectively, from 1100 to 1500, and from 1500 to 1750. Each of these sections treats, in turn, agriculture, industry, and, grouped together, trade, public policy, and finance. Extremely brief commentaries on population and, in the case of 1500-1750, prices precede the two major divisions into which the account is divided.

This division of the narrative fitted naturally the descriptive and institutional character of Clapham's interest. On the other hand, it denied him the possibility of imparting a sense of the living interaction among the parts of the economy or of the movement of the economy as a whole, over time. Clapham's structure automatically carries with it the impression that, in each sector of the economy, the important forces making for change lay within that sector, rather than outside. It is not accidental that the discussion of population movements and price trends is perfunctory. Modern studies which have refined our knowledge of the complexities and regional differences in landholding and agricultural techniques are woven in fine balance into the book, as are other institutional pieces of research; but some of the analyses which probe at the process of transition of the British economy from a medieval base to the commercial capitalism which emerged in the late seventeenth and eighteenth centuries are slighted.

Clapham was a rare and fortunate scholar. His last years saw him still at the peak of his powers, both in the history of the Bank and in the present volume. The limitations of the latter are those which he accepted in marking out his whole wide field of endeavor. He sought out and mobilized under the highest standards of scholarship enormous areas of factual knowledge and laid foundations in modern British economic history which are likely to remain solid. There is no cause to complain of his work in general or of this excellent survey; but there are still jobs to do and questions to answer.

Mr. Saltmarsh, in his editorial note, remarks, "I believe that those who knew and heard him will sometimes hear again, as they read, the tones of his voice." Although by no means a collection of old lectures this book remains a highly personal work. Through it comes strongly a man's intimate knowledge of his nation's countryside; a yeoman's pride in the early dissolution of feudal ties with arrangements based on the rights of individual men; a wholesome, ill-concealed pleasure when Britons outdo foreigners. Clapham brings to the evolution of a great nation's economy all the virtues of attachment which usually belong to a regional historian or antiquarian. It is pleasant to

think of a generation and more of Cambridge men being brought up on Clapham's version of the story; and it is good to have it between covers.

W. W. Rostow

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The Theodosian Code and Novels and the Sirmondian Constitutions. A Translation with Commentary, Glossary and Bibliography. By Clyde Pharr, in collaboration with Theresa Sherrer Davidson and Mary Brown Pharr. (Princeton: Princeton University Press. 1952. Pp. xvi, 643. $20.00.)

The massive crisis of our times has provoked a searching re-examination of the passing of Greco-Roman civilization, and an immense contribution to that end has been made by this monumental translation—the first to be made—by Professor Pharr and his associates, of the most important contemporary source for the death-throes of the Roman Empire. For, since Jacques Godefroy's edition of the Theodosian Code and the post-Theodosian legislation, published in 1665, with its masterly and still indispensable commentary, the exploitation of the vast storehouse of material contained therein has been largely reserved for specialists in Roman law and legal history. Hence, this volume—ten years in the making, and the beginning of a project to collect and translate all the source materials of Roman law—has opened up a new era of research in this prime source for the legal, administrative, political, economic, social, military and ecclesiastical history of the fourth and fifth centuries. Containing in the Code proper an official compendium of all general imperial enactments from A.D. 312-438, together with subsequent legislation in uncondensed form to 468, this body of laws spreads before our eyes a firsthand picture of one of the momentous transformations of human society.

The reader will want, first, assurance of the reliability of the translation, which has been prepared with scrupulous pains, an immensely difficult task because of the corrupt text and numerous ambiguities. Not to prejudice the translation by editorial interpretation, and to preserve the turgid flamboyance of the Byzantine officialese, Pharr has made the translation as literal as English will allow. Yet it seems to this reviewer that the principle of literalism has been applied to excess, so as to appear in many places supererogatory. The reader will also want to know that the volume is provided with a spirited introduction by the New York attorney C. Dickerman Williams, an outline of Roman history (excessively brief, with inadequate attention to the history of the fourth and fifth centuries), a mine of information in the glossary, an exhaustive index, and a map of the Roman Empire.

Mr. Williams in his introduction warns us that "we shall ignore the Code at our peril." His exhortation is evoked by the deadly parallels between the societal patterns revealed in the Code and those of our own age, and between the economic and social measures resorted to in order to stem the collapse of the Roman Empire and the steps taken by modern statesmen, and by the fact that western Europe disintegrated shortly after the promulgation of

the Code. Paradoxically, the Byzantine Empire in the east survived for a thousand years under the same regimented economy and social order. Moreover, Rome did not fall in a day. For all the basic phenomena institutionalized during the decline were inherent in the fundamental contradictions of the whole society and had already begun to manifest themselves in the mounting economic crisis at the end of the first century. It is a remarkable fact that, critically weakened in the internal economy and living constantly under the shadow of barbarian hordes without, the emperors and the ruling classes were able to sustain the basic integrity of the empire for centuries.

Beginning with the general crisis of the empire in the third century A.D., the inhabitants of the Roman world lived under a permanent state of siege for centuries. Faced with a critical scarcity of productive labor due to depopulation and the allocation of large numbers to the military forces and bureaucracy, a staggering agrarian crisis, disruption of the free flow of commerce, inflation, sharp rise in crime and brigandage, the emperors mobilized the entire population of the empire in a completely regimented garrison-bureaucratic-clerical state. This social order was not the realization of a political ideology, but the frantic adaptation of the reduced resources of the empire to the goal of survival of the ruling classes. And to the inhabitants of the empire, living under a system of rigidly controlled economy, almost confiscatory taxation to meet the fiscal needs of the central administration, and state compulsion to maintain production and services, the emperors Arcadius, Honorius and Theodosius could pathetically proclaim in 406, when the survival of the empire under the blows of the barbarians seemed in doubt, "We summon to military service all men who are aroused by the innate spirit of freedom."

In his commentary Pharr reiterates the view that excessive taxation was perhaps the most important factor that resulted in the collapse of the empire in the west. But the emperors had little choice, for, when the Roman state could no longer meet its fiscal needs as it had done in the early stages of its march to world power by booty in foreign wars, it resorted to heavier demands on the population, both in taxes and compulsory unremunerated labor. In the absence of a concept of a national debt in antiquity, the emperors oscillated between oppressive taxation, extraordinary assessments, and periodic remission of taxes when the economy seemed at the breaking point. The greater part of this tax burden was shifted by the powerful and privileged landowners to the backs of the lower classes, who were steadily impoverished, and whom the emperors were powerless to protect from the venality and rampant corruption of the bureaucracy and the landed military ruling class. Two of the concomitant effects were the rapid polarization of society into rich and poor and a drift to natural economy after a thousand years of brisk money economy in the Mediterranean.

To guarantee necessary labor and revenue, the concept of compulsory public services inherent in the ancient state was drastically stepped up, and social mobility was almost completely eliminated by a regime of social status and hereditary occupations in all spheres of the economy and administration. In this empire-wide conscription of labor and capital we see, for

example, the beginnings of rural serfdom, the concept of membership in rigidly controlled state guilds, and the resort to what were virtually confiscatory capital levies on moderately wealthy members of municipalities. One drastic measure contained in the Code is the branding of members of the hereditary guild of arms makers to prevent their desertion from the imperial armaments workshops.

But, in fact, the centrifugal tendencies in the empire, under the critical international conditions, the insupportable burdens imposed by the state, and the incredible corruption, were irresistible. There occurred, as the Code reveals, what amounts to wholesale desertion from the society, in the form of flight to the privileged clergy, the civil services, the army, the wilderness, brigandage, the barbarians, or to the protection of the powerful landed military nobility, who competed with the state for the labor of peasants and artisans, and before whom the emperors were often powerless. The empire could not have survived as long as it did without the assistance of these men, the feudal barons of the next stage of European society, and yet their growing power was one of the most important factors in the breakdown of the central authority.

Economic historians and students of the structure of the "closed" economy will welcome this accessible version of a prime source for what Gibbon, idealizing the Pax Romana of the second century, was moved to call "the greatest, perhaps, and most awful scene in the history of mankind."

MEYER REINHOLD

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The Bias of Communication. By HAROLD A. INNIS. (Toronto: University of Toronto Press. 1951. Pp. ix, 226. $4.50.)

According to the preface, this collection of papers further develops the thesis of *Empire and Communications,* published in 1950. Having read both works, the reviewer is still unable to decide which of various related themes is meant. The uneven pace and scope of social development are in themselves a commonplace assumption rather than a thesis to be debated. We come closer to a thesis in the "emphasis" on communications as determining objects of human attention and the "suggestion" of the converse.

A concept of monopolies of knowledge which dissolve to make way for new ones as new mediums of communication appear runs through these books and other writings of the same author. It amounts to an innovations theory—almost to a technical-innovations theory—of cyclical growth, the political units stressed largely sharing the fate of the monopolies. Speaking and writing tend to be active, listening and reading passive. Listeners and readers (particularly the latter) tend to be multiple. The multiplicity has increased with the appearance of paper, of printing and of improvements both in printing and in means of circulation. Moreover, reading is for the most part an indirect contact, with lags in time and differences in space which have increased with technical improvements. An oral tradition, here associated with common law, informal procedure and vernaculars, is held to be more flexible and conducive to freedoms. However, the written tradition has generally won

out in the end. Radio diffusion, first of the voice and then of gestures as well, seems likely to bring a whole course of development to an end. A new long cycle which appears to be emerging is fraught with great dangers to the individualism, the freedoms and the flexibility which Professor Innis treasured.

Another general theme, specified by the paper which gives the volume under review its title, is the bias of communication. The sharpest statement of it is at the close of the 1950 work. In brief, concentration on one medium of communication tends to overweight the development of a society either on the side of space and political organization or on the side of time and religious organization; but a second medium serves as a balancer, making for imperial growth and durability. Parchment added to papyrus in the Byzantine empire illustrates the balance. The displacement of parchment by paper in the West, introducing a cheap and copious but perishable material, is said to have timed a shift from a Church monopoly of largely sacred writings in a dead language to varied writings in vernaculars, and from ecclesiastical to political organization.

Shorn of their rich historical trimmings for purposes of review, the two themes are here little better than caricatured. On the other hand, more of the complex fabric of argument would have raised more debatable points. Minor shifts of emphasis, order or illustrative material would shed doubt upon stated or clearly implied conclusions. This reviewer is unhappy about the general proposition that an oral tradition makes for flexibility. The clerical monopoly of literacy was far gone before the sacred texts were translated into the vernaculars, as Pirenne has noted, for example, in his study of the education of merchants. The Reformation could be characterized as an appeal from the authority of a flexible institution to that of written texts which carried the rigidity of age into any language. Theodore Collier used to ascribe whatever toleration emerged to a multiplying of sects which gave dissent the safety of numbers.

"Communication" has become an omnibus label for social relationships varying from simple, direct and merely practical transmissions between persons to the shifting continuity of institutions on a world scale and throughout human time. Between these extremes are gradations which involve differences in quality as well as in amount. Each ideology of the subject fills the chasm between communication as a definite act and communication as the historical continuity of mankind in its own way. Innis seems to have deliberately refrained from creating a systematic theory of history in the conviction—itself clearly stated—that his own time and society were no more exempt from bias than others.

Some of these papers are histories as distinct from the theory or the philosophy of history. The one entitled "Technology and Public Opinion in the United States" is a highly informed and intelligent sketch of the history of publication. It should be of interest to any student of American history.

M. M. KNIGHT

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The Idea of Progress—A Collection of Readings. By FREDERICK J. TEGGART, with an introduction by GEORGE H. HILDEBRAND. Revised edition. (Berkeley and Los Angeles: University of California Press. 1949. Pp. xi, 457.)

There is a special value in approaching the history of the concept of progress through selections from leading thinkers. No systematic analysis can bring out in sufficient relief the profound differences in the settings which provided the background for these concepts of change and progress over so many generations. The texts themselves, even when short, serve as a constant reminder of the underlying differences in factual information and speculative thought. The introduction furnishes an indispensable guide and draws the selections together into an organic whole.

Although the philosophies of the classical period were inconsistent with any comprehensive concept of progress, basic elements of the idea emerge at an early date. If we pass over the doctrines of Hesiod of degeneration from a golden age, we find a substantial development of a concept of cycles of growth which survived in much nineteenth century sociology. Stated in somewhat different forms by both Plato and Aristotle the concept of cycles of social and cultural development remained the predominant analysis of change in classical antiquity.

It is noteworthy, however, that Thucydides and Lucretius present clear statements of a cumulative increase in knowledge and skill as the outstanding feature of social development. This idea was an important element in the thought of Augustine, who explicitly conceived social development as the embodiment of all the potentialities of the human mind. In the City of God, however, these ideas were overlaid by emphasis upon a Divine Plan which defined the ends of social life. Augustine gave much attention to the problem of freedom of the will, but his doctrine interpreted social development as a fulfillment of the Divine Plan.

The modern formulations of these concepts were hardly more than fully secularized versions of the Augustinian doctrine. The new view is clearly stated by both Pascal (1647) and Fontanelle (1688) though the implications are not very adequately expressed until the time of Turgot and Condorcet. The optimistic tone of eighteenth-century liberalism was carried over into this field of thought, and this concept of progress became a primary element in the philosophy of liberalism.

This development culminates in the work of Darwin. With him, systematic exposition in the introduction is likewise brought to an end. There are, however, several pages of stimulating reflections upon the present loss of faith in the liberal optimism of the eighteenth and early nineteenth centuries. There is no reference to the revisions of the empirical philosophy that have been taking place since Darwin, and more particularly within the last thirty years. From these points of view it would be possible to give new emphasis to the concept of cumulative increase in knowledge and skill.

The analysis of these phenomena should be separated from the biological problems of individual and social growth. If such a position were developed, the history of these concepts would present a record of a persisting dilemma of

choice between the somewhat restricted concept of cumulative mental achievement individually and socially, and the broader generalization which included all forms of quantitative growth. The classical concept of cycles is properly speaking a concept of growth rather than a concept of progress. It was, therefore, consistent with the conviction that change was incidental and not very important. In modern sociologies concepts of cycles, or even of nonrepetitive stages, became a source of genuine confusion.

Different kinds of growth require different techniques of analysis and concepts of growth cannot happily be given a melioristic significance. It is essential to distinguish between the cumulative phenomena of the mind and organized mental activities and the growth phenomena of biology whether individual or social. Even a very brief reference to these problems would give added meaning to the history of these concepts.

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International Aspects of Indian Economic Development. By D. T. LAKDAWALA. (New York: Oxford University Press. 1951. Pp. 191. $2.50.)

Indian Economic Policy. SOHAN RAJ MOHNOT. (Allahabad: Friends' Book Depot. 1952. Pp. ix, 224. Rs. 6.)

International Aspects of Indian Economic Development is an absolutely correct descriptive title of this dispassionate and closely reasoned volume. The analysis is of a detailed type so that only the most general idea of its contents can be given. Most of the subject matter falls under two categories: (1) the place of foreign capital in Indian economic development and (2) how exchange policy and trade policy can aid economic development with India still honoring international commitments.

India must develop her resources rapidly to overcome the discontented poverty of her people and to keep ahead of the steadily mounting population. If the people are to raise their living standard by 40 per cent in two decades, an annual increase in national income of 3.78 per cent is called for. One of the ingredients necessary for such rapid expansion is capital investment. By an income-savings-investment approach and by the balance-of-payments approach the author estimates about 30 billion rupees ($6.4 billion) of foreign capital would be needed over a 20-year period to sustain this rate of growth. It may be noted that this is close to the rate of foreign capital requirement envisaged in the official Five Year Plan recently published by the Indian government. It is estimated that about Rs. 12 billion is needed as equity capital and the rest as loans. The author believes that such quantities of foreign capital will be forthcoming since developed nations have recently become more sympathetic to industrialization of underdeveloped areas, and since this changed attitude has been institutionalized in the International Bank for Reconstruction and Development, the Export-Import Bank and the Economic Cooperation Administration (now Mutual Security Agency). However, to avail herself of this capital India must accept conditions of capital-granting countries including guarantee of exchange convertibility,

nonlimitation of profits on foreign capital (except in so far as domestic capital is so limited) and granting substantial control to foreign equity capital. He estimates that amortization and interest on such capital would amount to about 19 per cent of India's exports and would thus create a difficult but not insuperable transfer problem.

An exchange policy and trade policy are needed to insulate India from foreign depressions and to prevent an unfavorable balance of payments induced by the program of rapid foreign investment. Yet such policies should be adjusted to honor India's actual or possible commitments in the International Monetary Fund and International Trade Organization (in future). Conditions are discussed in which currency depreciation would and would not be helpful. The author suggests that the I. T. O. Charter should permit, but restrict, a modified multiple exchange rate system. He advocates taxes and subsidies on imports and exports as the most effective and least disturbing type of trade policy. Quotas are thought of only as a last resort and it is felt that India has little to gain from state trading.

Parts of the book are closely reasoned, yet a good balance is kept between theory and its application to India's specific needs. Diagrammatic presentation of certain aspects of the theoretical discussion will be found helpful. The outlook is definitely internationalist, which is not easy to achieve in a country needing such drastic domestic development. The last year or two has shown the author to be over optimistic about the possibility of India obtaining large capital grants. His optimism as to the imminent reality of the I. T. O. was unfortunately unfounded. This book is a welcome addition to the literature on India's economic development.

Indian Economic Policy is a tract for the times. Two great pleas stand out predominantly: (1) the need for more thoroughgoing economic planning, and (2) India's foreign economic policy must be subservient to her domestic needs for rapid industrial development.

The present Five Year Plan of the government of India proposes to increase land irrigated from 48 million to 57 million acres and increase food production by 7 million tons thus increasing the basic grain ration from 12 to 14½ ounces per person per day. It plans a development outlay of 18 billion rupees over a five-year period which may be compared to present national income of 87 billion rupees. This plan is hailed as a "laudable beginning" but is roundly criticized for being merely a plan for economic development rather than a full-blown plan for all economic activity. The author's most basic criticism is that present Indian planning is designed to operate within a framework of *laissez faire* using price incentives toward planning goals. He advocates a more rapid transition toward direct state controls, nationalization of new industrial sectors, exchange control and mechanization of large-scale cooperative farms on a voluntary-compulsory basis. At the same time the author points out the dangers and abuses to which such direct controls are liable, but considers that, if democratically administered, they are to be preferred to price incentives as a tool of economic planning.

"Conceding that the *status quo* has to be maintained," the author agrees

that the Five Year Plan "is a sincere effort for coordinated economic development of the country" (p. 60). However, he offers numerous specific criticisms. He feels that an overemphasis on agricultural and a neglect of industrial development will "prevent the plan from serving as a stepping-stone for further progress" (p. 52).

Although India desires to maintain friendly relations with other nations, he sees the primary function of her foreign economic policy as being to help realize domestic planning goals. He advocates that India more rigidly control her foreign trade, and that a much wider range of industries be granted tariff protection as an aid to industrial development. Exchange control is but one of the methods needed to help India overcome her unfavorable balance of payments; other advocated measures include import quotas, export subsidies particularly on goods earning hard currencies, bilateral trade agreements and judicious use of state trading.

There are chapters on the need for population control, the need for fiscal policy and specific controls to assure full employment, a survey of recent labor legislation in India, a short chapter on the place of agriculture in India's development plans, and a discussion of the usefulness of the public corporation as a tool of national planning.

About half the chapters have appeared earlier as articles in various Indian journals; as the author says this "has robbed the story of its continuity and spontaneous sequence" (p. vii). One major inconsistency in point of view is apparent to this reviewer. The majority of the chapters, while advocating a moderate socialism, are careful to point out the need of a government policy to assure continuing and adequate incentive in the private sectors of the economy. However, Chapter 3, which is a criticism of the Five Year Plan, ignores the problem of incentive almost completely. He calls the investment envisaged under the plan "meagre" but it is difficult to see where he would seek the additional capital. Although he advocates larger government borrowing (p. 43), he elsewhere warns that further deficit financing will lead to disastrous inflation (p. 42). We are told that taxes are too high and should be reduced, primarily as an incentive to industry. The need for foreign capital is realized but the author is not sanguine as to the amounts forthcoming in the immediate future. Thus the reader is left rather confused as to the method of drastically increasing the rate of planned investment. In the opinion of this reviewer, the author places too much emphasis on the need for industrial development at the expense of neglecting agricultural development.

In spite of these shortcomings, this volume is a good introduction to commercial and economic thinking in India concerning her most basic problems of economic policy. The style is interesting and there is a facile blending of economic background and political realism.

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Economic Systems; Planning and Reform; Cooperation

The Soviet Economy during the Plan Era; The Soviet Price System; and *Soviet Prices of Producers' Goods.* By N. JASNY. (Stanford: Stanford Univ. Press. 1951 and 1952. Pp. xi, 116; x, 179; vii, 180. $2.00, each.)

Mr. Jasny's impressive trilogy is a major attempt to pierce the veil of manipulated prices which the Soviets have drawn across the structure and development of their economy. If this work is to be viewed as an integral whole, it is probably best to read the three volumes in the inverse order of their appearance, starting with *Soviet Prices of Producers' Goods* and finishing with *The Soviet Economy during the Plan Era.* This course will lead the reader from the particular to the general, and should ensure that the bold strokes in which the final picture is drawn will not become engraved in his mind more firmly than is warranted by the nature of the methods of estimation which had to be used.

The central and most challenging conclusions of Jasny's work, as presented in the last-mentioned volume, spring from his revaluation of the Soviet national income and its components in terms of United States dollars at 1926-27 prices. This somewhat hazardous undertaking involves three distinct steps:

1. The estimation of various aggregates in terms of current prices, whether government-decreed or freely formed on collective farm markets.
2. The deflation of these values to the *Soviet* price level of 1926-27 by means of a number of specially constructed price indexes.[1]
3. The conversion of the figures so obtained into United States dollars of 1926-27 at rates of exchange giving parity of purchasing power over the various classes of goods involved.

In this general scheme Jasny's two books on the price structure fall into place as expansions of the second step, though in sheer volume and weight of evidence they transcend this rôle and become independent studies in their own right. The material brought together and sifted in these volumes is to be welcomed as a massive contribution to the field of Soviet studies. Ever since 1930, when the Soviets discontinued the systematic publication of price statistics, Western students have had to grapple with a type of problem more amenable to the mental equipment of cipher clerks than to the tools of economic analysis properly so-called. The messages intercepted were found to be in two main languages: the language of "stable rubles," dealing chiefly with gross output, labour productivity, and national income; and the language of current rubles, used in references to the budget, retail sales, investment, and fixed capital. Much effort has been expended on translating particular messages from one language into the other, and, occasionally, into straightforward English, but Jasny's study goes beyond this and evidently aims at providing us with a working dictionary.

It is not easy to say how far he has succeeded without having access to the very dispersed and recondite material used. As he relies mainly on price

[1] The official "stable ruble" figures purporting to be based on the 1926-27 price structure are rightly discarded as unduly "processed."

data for individual commodities, it requires something of an act of faith to accept his generalizations concerning the price-trends of whole industries and economic sectors. We are told, for instance, that since there are insufficient data to permit the computation of the weighted average price of all fuels used in boilers, "the trend of the prices of Donbass coal may be taken as fairly representative of the price-trend of all such fuels" (p. 54). This may be so, or it may not. While it is readily conceded that some boiler fuels rose more in price than Donbass coal and others less, the reader is in need of some assurance that this is a rabbit of respectable antecedents, and not out of a hat. Though undoubtedly of central importance in the country's fuel balance, Donbass coal accounted for less than half the calorie consumption of heavy industries in the early 'thirties (the percentage for light industry was less than a third), and its importance declined steadily in later years. The most summary Soviet calorie-conversion tables list some thirty types of coals alone, with at least 20 distinct calorific values and presumably as many divergencies in ash content and other qualitative criteria. This suggests a bewildering multiplicity of prices, among which only the eye of faith can pick out a suitable representative without an extensive knowledge of the performance of other candidates. Jasny's admirable exposure of the chaotic state of Soviet price planning in other parts of his work shows up the widely divergent and erratic price movements of close substitutes, and so does little to encourage complicity in his sanguine behavior. To my mind the transition from individual to composite price trends needs the support of a more aggregative analysis, such as comparison of the expenditure on fuel by various users with the total calorie-content of their fuel consumption. These data are available for a number of prewar years and could probably be collected and sifted with a fraction of the effort that went into Jasny's price compilations. In the only case where this method is extensively used, the case of rail transport, the results obtained diverge from Jasny's inductive generalizations; unfortunately he contents himself with stating the discrepancy and expressing the hope "that further analysis will solve the puzzle" (p. 56).

A similar source of uneasiness is the estimation of construction costs. Again the procedure of compounding individual price series by largely intuitive methods results in a trend markedly different from that yielded by a more aggregative method.[2] Jasny registers surprise at the discrepany, but comforts himself and his readers with observations on the general obliquity of Soviet accounting methods which "it would be absurd to call . . . 'statistics' " (p. 24). While one may agree with this view in more than one respect, it is hardly reassuring to find that the emphasis it receives at Jasny's hands varies in proportion to the divergence of Soviet official data from his own findings. It should be said in fairness, however, that many of the methods and sources which throw doubt on Jasny's indexes are explored and stated openly by the author himself.

The companion volume of the series entitled *The Soviet Price System* deals

[2] Comparison of parallel official valuations of fixed capital at the nominal prices of different years.

with three main subjects: an extension of the survey to farm prices and industrial consumer goods, an examination of that bugbear of critical analysts, the official "unchangeable" prices of 1926-27, and a review of Soviet national income accounting with some of its less-known tricks and foibles. In the survey on agricultural and general consumer prices, the descriptive portions give an excellent and much needed summary of the main lines of development, and the statistical illustrations appear to rest on a broader and more solid foundation than in the other price study. There is a summary appendix table giving the price movements of some thirty individual commodities for seven selected years between 1926 and 1950. To my knowledge this is the most extensive compilation of its sort to be published in the West, and there can be no doubt of its value as a work of reference. It is all the more regrettable that the author's method of aggregating these data into a price index for consumer goods as a whole bears all the marks of arbitrariness. Confusingly enough, this aggregation is carried out in the other volume of the series, *Soviet Prices of Producers' Goods* (pp. 18 and 19), where it appears in seminarrative form as an intermediate step in the estimation of a still more comprehensive price index (for industrial goods as a whole). The difference in intellectual climate between the scholarly and painstaking compilation of individual prices and the rough and ready guesses as to their conjoint movements, in the course of which much of the original information is discarded and the rest allowed to merge into a vague impression, detracts greatly from the high level of Jasny's work, and is apt to reduce our confidence in his method of selective price compilations as a tool of analysis in this field. Little comfort can be derived from various more aggregative checks suggested in the chapter on "phantom unchangeable 1926-27 prices." These are tainted by the same laxness and appear to be inconclusive.

The chapters on Soviet national income accounting are probably the most revealing parts of the book. Unfortunately Jasny's information here is secondhand; it is derived via Prokopovicz from a Soviet source of considerable authority[3] apparently not available in the United States. This explains why some of the most glaring manipulations of Soviet national income accounting are not mentioned, while others are perhaps given undue weight. Thus, for instance, the practice of counting the losses made in industry as part of industry's contribution to the national income, which may have caused considerable distortion in the early plan era (say up to 1936), is not mentioned. On the other hand, I am not convinced that the *total* yield of turnover tax is deducted from the net product of trade and imputed to industry. If this were true, it would be difficult to see why the Soviet source on national income referred to above should list the trade tax separately under that heading. Moreover, the size of the relative share of trade in the national income at current prices (9-15 per cent) would be difficult to explain if that tax were excluded.[4]

[3] I. M. Krasnolobov, "The Planning and Computation of National Income" (Moscow, 1940).

[4] The trade tax proper must be distinguished from the turnover tax paid by the State procurement organization (Narkomzag); with respect to the latter Jasny is probably right in assuming that Soviet practice imputes it to industry rather than trade.

The crowning volume of the trilogy is no doubt *The Soviet Economy during the Plan Era*. Here the results of the other two volumes are extensively used as tools of analysis. Estimates of total outlay on various items, such as munitions, military pay and subsistence, consumption and investment, are made for a number of years in terms of current rubles, to be subsequently deflated by the price indexes which Jasny considers to be severally applicable to them. The figures so obtained are then converted into United States dollars of 1926-27 in order to display the structure of national income through the years in comprehensible terms. The picture which emerges is a dismal one indeed. Private consumption is represented as having declined from three-quarters to less than a third of the national income between 1928 and 1948, while the share of defence expenditure appears to have increased from 2.5 per cent to close to 20 per cent. The lion's share is presumed to go to net investment (40.7 per cent in 1948, as against a mere 17.2 per cent at the start of the plan era). On this last point Jasny is in sharp disagreement with other Western analysts, such as Wyler.

The scarcity and poor documentation of Soviet statistics, which must be held responsible for the possibility of, and even necessity for, this type of estimate, makes it equally hazardous to disprove Jasny's findings without a research effort far beyond the scope of a book review. As a matter of general principle, the use of American prices of 1926-27 for Soviet national income computations extending as far as 1948 would seem to be of doubtful relevance. The margin of error involved in the estimates is of necessity so wide that the further step of converting the figures to American prices of, say, 1940 could not have materially affected the accuracy of the result, while the gain in significance and comparability with other estimates would have been considerable. International comparisons of economic structure in terms of national price systems are full of pitfalls and perplexities at the best of times, but when the spatial remoteness of the standard of comparison is aggravated by an equally alarming remoteness in *time*, the difficulties of interpretation begin to be quite serious. The best argument that Jasny could produce for his choice of 1926-27 dollars is probably the fact that the ruble-dollar exchange rate in that year was still operative, while it became nominal in later years. This is true, but hardly relevant to the significance of the final outcome. I cannot help feeling that a better hope for our understanding of Soviet economics lies in the direction of social accounting studies in terms of current rubles, with allowances for the abnormal structure of indirect taxes, depreciation rates, and profits. This would make the national income of the Soviet Union and the United States comparable in terms of *costs*, a far more objective criterion than the static consumer preferences implied in an esoteric price system.

Jasny's books deserve the closest study of all students of Soviet economics, in fact of anyone concerned with international comparisons and an over-all view of economic development transcending national frontiers. They deserve admiration as well, chiefly for the assiduity and patience which must have informed those massive and scholarly compilations, but in some measure also for the author's supreme confidence and resourcefulness in putting them to work in a good cause. These qualities must be highly rated in a subject

bristling with difficulties and frustrations, in which there is no room for the faint in heart. It is all the more regrettable, therefore, that as regards the final indictment of the planning system which Mr. Jasny has drawn up, this reviewer finds himself constrained, with all respect for the author's special pleading skills, to return a verdict of "not proven."

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Democracy and the Economic Challenge. By R. M. MACIVER. (New York: Alfred A. Knopf. 1952. Pp. 86. $2.50.)

In these five lectures, delivered on the William W. Cook Foundation at the University of Michigan, Professor MacIver provides a "liberal manifesto" calculated to help some in resisting the lure of the *Communist Manifesto* and, what is more important, to help others to understand the real values of the liberal democratic way of life. We need intellectual and spiritual rearmament as much as we need armament. MacIver's contribution is excellent; it is to be hoped that many other senior scholars will help in this work. "In these times," says MacIver, "it is not enough to hold aloft the banner of free enterprise. The cause for which men live, the flag for which they fight, must appeal to their hearts. Let us take this lesson from our adversaries. They offer to the Western peoples not only security but also a faith, and to the Eastern they promise not only land but a vision. . . . This vision is particularly necessary to win the loyalties of the young. We won't hold them, we certainly will not inspire them, if we make our case on the ground that capitalist enterprise is more efficient than socialist planning. . . . No, we must seek stronger and higher ground if we are to convince ourselves, still more if we are to seek to persuade other peoples that ours is the better way. That is why it is deplorable that in this country we are so superficial about our democracy. We do not appreciate the strength, the vitality, the depth and the breadth of the thing that makes us one" (p. 73).

In the first lecture the theme is the emergence of "private economic power" and its "historic role" in fostering the rise of democracy. The second lecture is concerned with the new rôle of the state as it turns to guide and canalise "private economic power." Very valuable in this chapter is the distinction between the welfare state, the socialist state and the communist state. The welfare state is "consistent with private economic power" and should be "welcomed as the surest protection against the perils of communist infiltration" (p. 30). The third lecture is on the "portent of Karl Marx." "The leading spirits of communism—in countries where it is not already enthroned—have espoused it not because of a detestation of capitalism but because for one reason or another they are at war with the society in which they live. . . . It is our own betrayal of democracy more than the shortcomings of capitalism that fills the communist ranks" (pp. 38-39). The fourth lecture discusses the question "whether a fully planned, centrally directed economy . . . can exist with the attitudes and the processes of democracy." Again there is emphasis on the difference between the welfare state and the socialist state. "The goal is not

socialism nor capitalism, nor any neat blueprint of economic organization. The goal is the freer and fuller life of man in his society, equipped with all the means that liberate his capacities" (p. 70). The final lecture is an appeal to America to rise to the call "to give a new translation of the ancient and ever new demand for the union of Liberty and Order" (p. 85). Two points need emphasis. First, "democracy perishes if it compromises with totalitarianism . . . whereas some socialism *must* be mixed with capitalism if capitalism is to survive" (p. 78). Socialism does not mean democracy (that is the "fallacy of the left") but capitalism does not mean democracy either (that is the "fallacy of the right"). Second, racial and ethnic discrimination is a "rank betrayal of our democratic faith" (p. 82) which "lowers our standing before the world" and "hurts us at home" (p. 83). "We must abolish discrimination. Only so can we fulfill the meaning of America. Only so can our great tradition become anew a vital reality" (p. 84).

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Economic Systems in Action: The United States, the Soviet Union, and the United Kingdom. By ALFRED R. OXENFELDT. (New York: Rinehart. 1952. Pp. ix, 175. $1.50.)

The purpose of this book, the author tells us, is to achieve two goals. His plan was to write a brief and nontechnical text that could be understood by an "intelligent high school graduate." The material presented was to be "organized around the basic functions that every economic system is expected to perform." It is the impression of the reviewer that the pedagogical aim has been fully realized. The book is admirably suited for beginners in economics, either as a supplement to the principles text or for a class in current economic issues. It is hardly a satisfactory text for a systematic course in comparative economic systems, mainly for its theoretical particularity.

The central proposition of the author is that to compare is to evaluate. Evaluation requires standards of judgment as well as identical problems to be solved by each economic system. Each economy has to solve five identical questions: what and how much to produce, how to divide income adequately, how to select the most efficient methods of production, how to direct individuals into the most productive occupations, how to improve the progressiveness of the economy. To answer these questions, the author develops standards of performance appropriate for each system. The actual performance of the American economy is compared with the welfare standards of efficiency and equity. The Soviet economy is compared with the standard of a "good economic plan." British socialism is compared with the standard of full employment and income equality. What is the result?

A significant body of information is presented effectively in terms of standards and actual performances. Yet two deficiencies are obvious. In many cases the standards of judgment defied operational definition. Or the evidence necessary to measure the degree of attainment was missing. In the few instances where standards and data were adequate, the conclusion was that neither one of the economic systems considered was as effective as it could

or ought to have been. The best one can achieve with this method is to indicate deficiencies that can be remedied within the framework of each system. The method can tell us little about the degree of compatibility among these systems.

More serious is the fact that a comparison in terms of ideal standards does not allow for a discussion of essential institutions of the actual economies. For instance, the treatment of the American economy does not include a systematic discussion of the economic rôle of large corporations, trade unions, or farm organizations. The welfare standards chosen presuppose effective competition and did therefore not call for a discussion of how these three institutions have changed the actual functions performed by the pricing system. In assessing the achievement of the Soviet Union, the institution of forced labor is regarded as noneconomic, imprisoning merely the politically dangerous. The ideal standard of the highest possible output, which would be higher if free labor only were employed, is utilized to argue that forced labor is not in the interest of the Soviet Union (pp. 114-115), and must thus be insignificant.

Although the author has utilized his method with great skill, often going beyond its inherent limits, it seems to the reviewer that presentation of the essential institutions must precede evaluation if students are fully to understand the actual operation of contemporary economic systems.

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The Cooperative Movement and Some of Its Problems. By PAUL HUBERT CASSELMAN. (New York: Philosophical Library. 1952. Pp. xiii, 178. $3.00.)

The author of this well-written little book is a professor of economics at the University of Ottawa who has been active in the cooperative movement. The Foreword is by Dr. M. M. Coady, a leader of the Antigonish Movement. As the author points out, apart from James P. Warbasse's *Cooperative Democracy*, and Horace M. Kallen's *The Decline and Rise of the Consumer*, few major works in America have dealt with the cooperative movement's basic problems. That is the main purpose of his book. Hence it is addressed primarily to those familiar with cooperation (Introd., p. xi). Professor Casselman's approach is not doctrinaire. Cooperation is not held up as a panacea for all economic and social ills. On the contrary, recognizing that this method is not always superior in every line of endeavor, he doubts the feasibility of a cooperative commonwealth, and favors instead the competitive yardstick goal of using cooperatives to curb the evils of capitalism (pp. xii, 11, 52).

An introductory review is given in Chapter 1 of the working principles of cooperation, classified according to the ideals underlying them. The purpose of Chapter 2, which deals with attitudes toward and major schools of cooperation, is not clear. Is it merely descriptive, or is it intended to show that indifferent, neutral, and hostile groups constitute one basic problem, and lack of agreement among cooperators constitutes another?

Chapters 3-9 come to grips with the main problems of the cooperative

movement. In considering problems of cooperative organization, Casselman rightly stresses the primary need for organizing financial cooperatives of various types. Concerning the problem of effective education, useful suggestions are made in accord with principles of progressive education, and the Antigonish Movement, which uses cooperation as an instrument of education, is described. Of the two chapters devoted to a comprehensive analysis of the cooperative movement's relation to the state, one gives detailed attention to its relation with socialism. Here perhaps Casselman could have devoted less space to proving a fairly obvious point—that "cooperatism" differs from socialism in certain fundamental ways. His discussion of cooperative-state relations would have benefited from J. P. Warbasse's *Cooperative Peace* (1950), which is nowhere mentioned. A valuable chapter is that dealing with cooperatives and labor. Subjects covered include the advantages of cooperatives to labor, participation by labor in the movement, labor's relative indifference in America compared to Europe, and sources of cooperative-labor friction. Discussion of producer-consumer relations among cooperatives is less complete, but interesting and informative. Finally, the problem of taxation is covered fully and competently. According to the author, patronage dividends paid out or retained by producer purchasing and consumer cooperatives are neither taxable as personal income nor as corporate income. These organizations are in no sense corporations, and moreover, patronage dividends consist of overcharges, or of withheld savings from group buying (pp. 140-42). By way of conclusion, Chapter 10 makes a final plea for cooperation, after reviewing its advantages.

The book is perhaps too brief, and at times lacks the depth of *Cooperative Democracy* and *The Decline and Rise of the Consumer*. It is, however, extremely readable and a welcome addition to the literature of this field. Valuable features are the careful documentation, a twelve-page bibliography by chapters, and an adequate index.

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National Income and Social Accounting

Wages and Salaries in the United Kingdom, 1920-1938. By AGATHA L. CHAPMAN assisted by Rose Knight. Stud. in Nat. Income and Expenditure of the United Kingdom, No. 5. (Cambridge: The University Press. 1952. Pp. xiv, 242.)

Miss Chapman's study *Wages and Salaries of the United Kingdom, 1920-1938* is the most recent in the series on national income and expenditure which the University of Cambridge and the National Institute of Economic and Social Research are issuing. The study is a work of admirable and indefatigable scholarship. This is fortunate not alone for those concerned with employment and wages in the United Kingdom. It is equally fortunate for those econometricians and business-cycle analysts who would use UK data for

national income and expenditure to study growth trends, savings-income ratios, etc.: with wages constituting two-thirds of national income in this period the accuracy with which they are estimated will substantially affect the accuracy with which national income as a whole will be estimated.

Aside from an introductory chapter on definitions and concepts, and two others on the reliability of the estimates, Miss Chapman devotes the entire study to describing how she prepared the annual estimates for employment, wages and salaries and average annual earnings (*i.e.*, full-time equivalent). To assess the study adequately would demand considerable time—to work through 200-odd pages of patient investigation—and a broad acquaintance with the intricacies of British economic data in virtually every field. However, we may attempt a trans-Atlantic judgment on at least the verisimilitude of the final estimates in the light of American data trends and economic relationships.

For estimating employment, her general procedure is to use benchmarks from the Production Censuses of 1924, 1930 and 1935 (or the Population Censuses of 1921 and 1931) and interpolate by employment series derived from data of the unemployment insurance system. For wages and salaries, chief reliance is placed on E. C. Ramsbottom's indices for wages and the Marley-Campion indices for salaries. Given the nature of these raw materials, it is unlikely that substantial improvements in the accuracy of the estimates could be made. It is important, however, to surmise how adequate the estimates prove to be.

One critical aspect is how well they portray cyclical variability. Of the cyclical changes in her records, the most extreme—as in that for the United States—is the 1920-21 drop, and it is therefore worth special attention. From 1920 to 1921 rates of pay (as measured by average annual earnings) declined by 5 per cent (or less) in every industrial group but two—fishing and mining. For these two groups, rates declined about 20 per cent. Cash mining wages dropped by 100 million pounds—or far more than the drop during the 8-month strike year of 1926. The somewhat unlikely spread in earnings trends may be related to the methods of estimate. For mining, Miss Chapman uses a different procedure for the year 1920 than for subsequent years. She does not indicate how closely such a procedure reproduces benchmark data in later years—hence we do not know how comparable the 1920 and 1921 estimates may be. For fishing, the drop rests on the implicit assumption that wages form a constant ratio to value of fish landed. This assumption, Miss Chapman is careful to point out, does not fit well with data for years in which we can check it (1929-34, 1938). Moreover, it is likely that the employees' share was in fact smaller in the high 1920 prosperity than in later years.

Turning from the wage rate sources of the 1920-21 decline, what of the employment shifts? For manufacturing and a number of other major groups the 1920-1921 change is estimated as the change in the numbers of insured workers minus the number of insured unemployed workers. The latter group is defined to include persons on short-time. Since the number of short-time workers increases in depressions, that group will constitute a growing number of employed full-time equivalent workers. Miss Chapman's treatment of them as completely unemployed, therefore, is likely to overstate the 1920-21 decline.

For trade, finance, insurance and a substantial part of the service industry, it is arbitrarily assumed that employment declined by 10 per cent. Such a decline is modest in the light of declines in, say, manufacturing employment. However, its reasonableness is still in question: no decline occurred in any subsequent year between 1921 and 1938—neither in 1926, the year of the general strike, nor in the depression following 1929. Since, therefore, wages and salaries are estimated for 1920-21 as the product of employment times an average wage-salary, the combined effect of this treatment of short-time in many industries, and the assumption of decline in others, is likely to overstate the 1920-21 decline.

Miss Chapman's figures show an almost unvarying level of wages and salary aggregates from 1921 to 1933-34. Prosperity such as that of the American 1920's is completely absent in the British record. Manufacturing wages—one of the most sensitive earnings groups—are almost identical in 1924, 1930 and 1935—years for which benchmark Census of Production information is available. *A fortiori,* other industry groups show a similar stability over these years.

The 1932-38 change provides another point of interest for cycle analysis, reaching as it does from the lowest point in the depression to the last year for which this study provides figures. Here, too, the results are mixed. According to Miss Chapman's estimates, the average annual earnings of employees in manufacturing rose by 10 per cent over this period, with correspondingly smaller increases in distribution and service. However, the gain shown for agriculture is 18 per cent. In the United States economy such a disparity, and in this direction, would be unreasonable. This gain essentially represents the change in the minimum rates set under the Agricultural Wages (Regulation) Act in certain contested cases. As such, it is not likely to allow for changes in the percentage of persons working at minimum rates and the percentage working above these rates. In a recovery period, such as 1932-38, it is likely that these proportions—and hence average earnings—would shift differently from a set minimum rate.

Miss Chapman cannot be commended too much for her care in comparing her results with those of Bowley, Clark and a multitude of other official and nonofficial check points. Some of the comparisons reveal a consistency in British data which is far greater than we could hope for in similar American sources: for example, the number of national and of local government employees as reported in the 1931 Census of Population is almost identical with the totals reported by the individual departments and organizations. On the other hand, some of the comparisons prove a bit misleading. For example, the earnings bill as estimated in this study for trade in 1924 is compared with an estimate based on a special earnings inquiry of the Ministry of Labour in that year. The virtual identity of the two estimates, however, essentially rests on the fact that the wage totals are secured by multiplying identical employment figures first by the rates of earnings in certain distribution trades and second by rates for cartage and haulage and for warehousing and cold storage, and these rates were almost identical.

A terminal chapter on reliability of estimates follows the tradition of King

and, more immediately, Kuznets in trying to assess for the reader the reliability of the results for the years 1920 and 1938. This is further testimony to the scholarly nature of the study but it is doubtful whether this tradition is worth perpetuating. To say that the figure for average annual earnings for agriculture in 1938 is Class B (a firm estimate) is a judgment we must respect. But it is equally a judgment which may be contested: no benchmark estimate exists to fix a level for this series, and—more importantly—most users are concerned with the still more difficult question of change.

In future editions it would be informative to have a chapter comparing employment and output trends, with some commentary on the implied productivity measures, and some comparisons between the trend in wages and salaries on the one hand and the—presumably independent—Cambridge-N.I.E.S.R. estimates of consumer expenditure on the other hand. Economists are certain to be interested in the labor market relationships revealed by these figures—with changes in employment being positively correlated with changes in wage rates in some industries, negatively in others. Perhaps Miss Chapman herself will report on these in some future analysis.

It is to be hoped that the ability, care and hard work which are apparent in this review of wages and employment in the United Kingdom—gaps filled, sources reconciled, estimates patched up—will be equally apparent in future studies in this series. The results of Miss Chapman's work are certain to be used widely and frequently in the years to come.

STANLEY LEBERGOTT

Washington, D.C.

Business Fluctuations; Prices

Federal Grants and the Business Cycle. By JAMES A. MAXWELL. (New York: National Bureau of Economic Research. 1952. Pp. xiii, 122. $2.00.)

Several "built-in stabilizers" have been added to the public sector of the economy during the past two decades. Expenditures have been made more responsive to cyclical swings in business activity through the adoption of the unemployment insurance program and the system of price supports for agricultural products. Revenues have also been made more responsive, largely as a result of the increased relative importance of income and profits taxes. The mildness of the 1949 business decline and the speed of the subsequent recovery can doubtless be attributed in part to the operation of these automatically compensatory fiscal adjustments.

Stabilizers of this type have obvious appeal. The existing devices, however, need considerable strengthening before they can be important in cushioning a large-scale business depression. How might this strengthening be accomplished? This book examines a particularly promising avenue of approach, namely, the possibility of establishing flexible federal grant programs which would serve a countercyclical purpose and also place certain governmental

services on a more assured basis in both prosperity and depression. The author's conclusion—stated more implicitly than explicitly—is that a feasible plan can be worked out which would achieve an important countercyclical effect.

There is far more in this small volume than appears at first glance. Professor Maxwell has given us a very compact and useful description and analysis of the important federal grant programs: their history, their size, their behavior during business cycles, the lessons of experience, the defects in the programs, and the proposals for reform. He also presents a careful and concise analysis of public works, both federal and state-local. But this is not all, for the author breaks new ground by introducing some original and highly attractive proposals for automatically compensatory grant programs. The book follows the typical pattern of National Bureau publications: controversial issues are treated very cautiously, generalizations are few and guarded, there is a minimum of literary flourishes, and as much as one-third of the volume is devoted to statistical tables and charts. However, Maxwell has been more successful than most writers for the National Bureau in providing a stimulating treatment which molds statistical and theoretical conclusions into practical proposals for governmental action. These proposals are all the more worthy of serious consideration because of the author's long experience in the field of intergovernmental fiscal relations and the campaign he has waged to make students of public finance more appreciative of the significance of federalism.

One cannot help being greatly impressed with the ingenuity behind the author's proposal for a flexible scheme of public assistance grants covering public assistance as a whole or selected categories of assistance. In brief, the scheme involves the establishment of a national minimum expenditure per recipient, the computation for each state of a "standard effort," which represents the potential state expenditure per recipient if a given percentage of state income payments is devoted to this purpose, and the determination of matching ratios based upon the relationship between the standard effort for a state and the national minimum.[1] The federal government's share would be the largest for the poorest states, and the smallest or nonexistent for the wealthiest ones. This scheme is flexible, since both the national minimum and the standard effort can be changed. It is automatically responsive to the business cycle, because a given percentage state-local standard effort would cover more of the national minimum in periods of high income than in a depression, and because the federal share of the cost of the program would grow and shrink directly with the number of persons who became eligible for benefit payments. Maxwell is aware that the operation of a plan of this sort would face certain dangers and difficulties, and he suggests how these might be kept to a minimum.

The proposal for public works involves the creation of a federal public

[1] This scheme is an extension of the author's earlier thinking on this subject. (See J. A. Maxwell, *The Fiscal Impact of Federalism in the United States* [Harvard University Press, 1946], Ch. 17).

works authority which would program federal projects according to cyclical conditions and exert cyclical control over state-local construction expenditures. The latter control would operate through grants for planning public works and through cyclically variable grants and loans for financing projects that have already been planned and cleared in advance. The author takes cognizance of the important obstacles to the use of public works spending for damping business fluctuations. Various factors which influence the timing of public works are analyzed, such as the limits to the deferability of projects, the complementary nature of certain types of public and private construction, and the long period often required for planning and construction. Evidence is presented showing that governmental agencies responsible for construction projects often like to see their projects initiated and completed as rapidly as possible and tend to be reluctant to fit their operations into a countercyclical pattern.

A minor objection might be raised to Maxwell's suggestion that the level of private construction be used as the chief guide to policy decisions concerning the timing of public works. Private construction does not always move with the general business cycle (witness 1927-29) and, therefore, will not always be a reliable guide. Some critics might deplore the fact that the different grant and public works proposals are not developed within a broader fiscal policy setting which allowed for other types of expenditure flexibility and for tax adjustments, but an extended treatment of that type is clearly beyond the author's assignment.

This volume is the fifth publication of the National Bureau's Conference on Research in Fiscal Policy. The fact that it includes a rather full discussion of policy questions is partly a reflection of the fact that the initial suggestion for the study came from the President's Council of Economic Advisers.

HASKELL P. WALD

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Business Cycles. By D. HAMBERG. (New York: Macmillan. 1951. Pp. ix, 621. $5.00.)

There are now a half dozen textbooks in the field of business cycles, and there are few fields of economics in which the texts are so uniformly good. Professor Hamberg's book is no exception. It is fully up to the high standard set by its predecessors, and possesses some distinctive features that will surely appeal to many teachers.

The book is divided into three parts. Part I consists of introductory material, beginning with a chapter on statistical aspects with an appendix in which the chief methods of time-series analysis are briefly sketched. The second chapter lays the theoretical basis for the subsequent discussion by introducing the concepts of national income and product, and proceeding to a preliminary treatment of income fluctuations. The final chapter in Part I develops the multiplier and accelerator, and their interaction in simple models.

Part II, "Theories of the Business Cycle," occupies roughly half the remainder of the book. The first of seven chapters, and the longest, deals with Keynes and the stagnation thesis in considerable detail. Further chapters

cover the pure monetary theory with particular reference to Hawtrey; the monetary and nonmonetary overinvestment theories, with a seven-page appendix on the Ricardo effect; Schumpeter's theory; "Underconsumption Theories," treating the work of Foster and Catchings and Hobson as representative. There is a chapter on agriculture, cost-price relationships, and expectations, under the title, "Influence of Strategic Factors"; and another concerned with international aspects of cyclical fluctuations.

Part III opens with a chapter on "Eclectic Theory of the Business Cycle," in which exogenous and endogenous forces are distinguished, and a synthesis of elements of the theories previously discussed is developed. Further chapters provide historical accounts of business cycle history in the United States in the 'twenties, 'thirties and 'forties, respectively. Two others deal with monetary policy and fiscal policy.

As his distribution of space would suggest, Hamberg believes that an undergraduate course in business cycles should emphasize theory rather than either history or policy. He believes, moreover, that there are substantial advantages to be derived from a translation of the various terms used by different writers into a common language, and he has employed a "Keynesian" vocabulary throughout the book. Thus, the Wicksellian "natural rate of interest" is rendered as "the marginal efficiency of capital," and so on. This device is skillfully and consistently applied, and will certainly save students a great deal of drudgery as well as some confusion. Whether this is a merit or a defect of the book is, of course, an arguable question. Hamberg has not tried to please everyone, but he has made what many will regard as a considerable contribution to effective teaching.

Hamberg's book is much too good to appeal to the charitable instincts of a reviewer. The author has exercised his obvious competence with a strict view to the capacities of his undergraduate audience, and he has taken pains to work out an interesting and comprehensible presentation of his subject matter. Although his chief concern is admittedly with theory, he has not slighted his chapters on history and policy, and his style is adapted to the narrative in a manner calculated to keep readers awake. On controversial questions, the author states his own position and labels it as such, thus opening the way to further discussion. Any instructor can use this textbook as the basis for a high-level course in business cycles, and whether or not he chooses to do so is largely a matter of taste in the competitive scene. Disciples of the late Professor Mitchell will feel that he gets short shrift in the page and a half given him, and those teachers who have no use for the aggregative approach will naturally prefer another product. Given Hamberg's objectives, however, there is little fault to be found with his book. The flaws to which I now call attention stand out as minor deficiencies in an excellent piece of work.

Chapter 2, after giving a very clear statement of the definitions to be used throughout the subsequent analysis, proceeds immediately to a treatment of income fluctuations in which the distinctions just made are ignored. If the student has heeded the author's warning to familiarize himself thoroughly with the concepts, "particularly saving and investment," he will be disconcerted by an analysis that seems to make changes in the level of *national* in-

come depend upon the relation of investment to saving out of *disposable personal* income. Furthermore, the statement on page 50 that "whenever reference is made to consumption in relation to income, we will ordinarily be referring to disposable income," is not borne out by what follows. The propensities to consume and to save are actually discussed in terms of *national* income, and the illustrative tables and graphs in both Chapters 2 and 3 show national income as the independent variable. Since the terms "national income," "received income," and simply "income" are all used interchangeably in both these chapters, students will need some help if they are to understand just what is going on. I suspect that an explanatory paragraph or two was left out of the final version of the manuscript somewhere in the second chapter.

In the chapter given to Schumpeter's work, the aggregative terminology does not show at its best, but the exposition is nevertheless adequate to give students a sound introduction to a subject of increasing interest. It is thus especially disappointing to discover among the "Critical Remarks" with which this chapter, like the other theoretical chapters, concludes, some erroneous comments of a most misleading character. Hamberg's minor criticisms of Schumpeter are possibly debatable, but on the major points he is quite wrong. Schumpeter never held that the distribution of entrepreneurial ability is anything other than "rather gradual" (see Schumpeter's *Business Cycles,* Vol. I, pp. 99, 130, for instance); and there is no "Great Man Theory" of history to be found anywhere in his work (compare *Essays of J. A. Schumpeter,* pp. 216-35, and especially p. 234, n. 10). Hamberg will undoubtedly make good these lapses at the first opportunity; meanwhile, they may be used as a basis for some profitable class discussions.

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Money and Banking; Short-Term Credit; Consumer Finance

Federal Reserve Policy-Making. By G. L. BACH. (New York: Alfred A. Knopf. 1950. Pp. xvii, 282. $3.00; text ed., $2.20.)

Students and teachers of money and banking who are constantly looking for more and improved material for monetary courses above the elementary level will be intrigued by this volume by Professor Bach.

The book has two main purposes: (1) A study of the *process* of Federal Reserve monetary and bank-supervisory policy formation, and (2) a look analytically at the policy-making experience of the past quarter century to see what lessons it may have for the future. The study does not deal with monetary theory or an evaluation of monetary policies. Emphasis is upon whether present organization and procedures have assisted in the formation of "good" policies. It is partly a product of research done by Bach for the Hoover Commission in 1948.

Part I relates to Federal Reserve organization and responsibilities. For

those acquainted with the field of money and banking, this section covers material with which the reader will have had frequent previous contact in most texts and in Federal Reserve System publications.

Part II deals with internal policy formation, giving attention to open market operations, reserve requirements, discount rates, selective controls, bank supervision, direct lending and a discussion of those who make Federal Reserve policy. This section also has much in it which informed students of American banking already know. However, it is seasoned with significant observations on the human aspect of Federal Reserve operations and the degree to which the personnel of the Board, Open Market Committee and of other groups play upon the policies which are made. This aspect of the volume makes it somewhat unique among recent studies of the Federal Reserve. It could only be written by someone like Bach who has had personal contacts as a member of the Federal Reserve staff and other governmental agencies. Numerous critical observations are made, such as on page 59, where it is remarked that a body of 25 to 30 people, as usually make up the Open Market Committee meetings "has not been found a highly effective deliberative body."

Part III analyzes the external relations of the Board and their impact upon policy-making. These include the Treasury, Securities and Exchange Commission, the Executive Office of the President, and bank supervisory agencies such as Federal Deposit Insurance Corporation, the Comptroller of the Currency and the State bank examination departments. A discussion of Treasury leadership in monetary-fiscal matters and the independence of the Board (Ch. 11) is of great current interest in the light of the Douglas and the more recent Patman Subcommittee reports. Unfortunately this book was written before the accord between the Federal Reserve and the Treasury. The current scene has somewhat changed and monetary policy has regained some lost ground since Bach wrote. After reading the volume, one should read the Hearings before the Patman Subcommittee[1] including Bach's panel discussion (pp. 748-61).

Part IV analyzes the meaning of much that was discussed in the earlier portion of the book, and for many will be the section which makes the greatest contribution. Whether one agrees with the author on all points is of less significance than that stimulation is provided to consider many phases of the organizational-policy-making procedures of our central banking system, an area so frequently neglected. From statements such as, "Control of the nation's money supply is one of the most basic powers a government can and must have (p. 234)," with which most everyone will agree to, "There is a serious question whether bank examination in this country during the past quarter century has done more good than harm" (p. 245), with which many will disagree, there is plenty to stimulate thought. For example, it is suggested that the Federal Reserve either should have greater independence from the Treasury if a central bank is to be maintained, or the central bank should be brought closer to the Treasury. As now constituted, the advantages of neither

[1] *Monetary Policy and the Management of the Public Debt; Hearings Before the Subcommittee on General Credit Control and Debt Management; Eighty-Second Congress* (Washington, 1952).

are secured (Ch. 13). The author leans toward a more independent Federal Reserve with a greater responsibility to participate in government policy formation. However, the drastic suggestion that the Treasury might borrow "only or largely from the Federal Reserve" and the Federal Reserve would have the power to issue and deal in its own securities (pp. 219-20), should at least lead to lively discussion among advanced students.

A reviewer should not quarrel with a writer who competently does what he set out to do. However, it is unfortunate that as much space was taken for the material which is generally known in the professional field when greater analysis of the part to be played by monetary and fiscal policy is needed. Perhaps Bach will provide us with this in a subsequent study.

Federal Reserve Policy-Making is well written. It can be a vehicle for stimulating group discussion and is recommended for use in monetary courses beyond the elementary level. The emphasis on the impact of organizational and personnel factors upon policy is a useful and needed contribution.

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Geld und Kredit. By ALBRECHT FORSTMANN. 2 vols. (Goettingen: Vanderhoeck & Ruprecht. 1952. Pp. 821. DM 53.50)

In his treatise on "Money and Credit" Albrecht Forstmann (according to the publisher, Germany's leading monetary theorist), has made an important contribution to economic literature. His two-volume work, which covers all the problems of monetary theory and monetary policy (excluding the rôle of money in international relations), is an excellent introduction to this field of economics. The book contains an integrated reinterpretation of the views of most of the prominent German and non-German writers and some original ideas of the author himself. The book is well organized, the exposition is systematic, and the information is, on the whole, up-to-date.

Although the author expresses his own views forcefully, he does not develop a specific theoretical system for which he could claim original and independent authorship. His comments and conclusions are interspersed in the text, and it is difficult to disentangle them from the opinions of those writers (or their critics) whose theories are discussed and analyzed by the author in detail.

Forstmann's eclectic approach to monetary theory is reflected in his method of presentation. He proceeds step by step, quoting extensively from the writings of other economists on each subject, and indicating his approval or disapproval of their opinions. Points of disagreement between different theories and policy objectives are clarified wherever necessary. This method of presentation adds historical perspective to the book. The book will be particularly helpful to students of economics who need both elementary and advanced instruction; and it is well suited for "practical" people, engaged in central banking, commercial banking, or public financial administration, whose understanding of theoretical problems will be enhanced by the thorough coverage of the existing literature in this field.

Precise language in the text is supported by the use of relatively simple algebraic equations, and occasionally by the use of diagrams. Effort is made to clarify the terminology of the subject by accurate definitions, and to facilitate the understanding of complex theoretical problems by elaborate classifications and sub-classifications. These efforts are, on the whole, praiseworthy; but the author's excessive preoccupation with detail and the deliberate use of repetition as a didactic device make the book ponderous.

In a short review the wide range of problems discussed by the author and the wealth of material presented in the text can hardly be summarized. It is impossible to duplicate here the exposition of the ideas of many writers whose contributions to the text—both in volume and in substance—far exceed the author's own contribution to monetary theory. The following remarks are, therefore, largely confined to a quick survey of the organization and contents of the book.

The author may be described as an opponent of the "New Economics" in the strict sense of the term. However, his sharp criticism of elements of the Keynesian theory does not prevent him from accepting, by and large, the Keynesian approach and many Keynesian conclusions. Keynes is more frequently and more extensively quoted in the text than any other writer (most quotations, however, are from Keynes' *Treatise on Money*, not from the *General Theory*). Apart from Keynesian ideas, the influence of Wicksellian thought appears to be predominant. Wicksell's theory of the cumulative process (with some modifications) occupies a central position in the book. Altogether, quotations from more than seven hundred writers are incorporated in the text; among them are Eucken, Haberler, Hahn, Hayek, Myrdal and Schumpeter, who are more extensively quoted than others. This indicates not only a preference for books written in, or translated into, the German language, but also a preference for certain theories.

The book is divided into two volumes, roughly corresponding to the division of the subject into "pure" and "applied" theory. The first chapter of Volume I contains an outline of the scope of the analysis. Forstmann's aim is the integration of monetary theory with general economic theory. He sets himself the task of exploring all the factors which determine the influence of monetary phenomena on real economic processes.

Chapters 2 and 3 contain a comprehensive discussion of the basic elements and principles of the theory of money, credit, and capital. In this section (pp. 28-124) the author describes the various kinds of money, and the functions of money, in great detail, before he turns to the analysis of the various theories of value of money (pp. 125-208). The form of presentation of these theories is characteristically didactic procedure. They are divided into three groups: (1) value theories (subdivided into subjective and objective theories); (2) price theories (production cost and quantity theories); and (3) income theories (static and dynamic). The quantity theory (in any form) is rejected on various grounds (because it deals with symptoms rather than determinant factors, because it ignores changes in relative prices, etc.). None of the arguments used are particularly original, but they have been given a "new look." The author then criticizes Keynes' "static" income theory (from the

"Treatise"), and finally proceeds with the discussion of the dynamic income theory to which he subscribes (pp. 193-208). The author does not attempt to demonstrate here or in any other part of the book that the theories presented are capable of statistical application.

In the chapter on the theory of credit (pp. 209-98) the author discusses the interrelationship between money, credit, and capital, including the functions of the interest rate. The dichotomy between the theory of money and the theory of credit is for the author more than a matter of terminology. He emphasizes the point that real economic processes are affected primarily by changes in the "circulation of credit" (*Geschaeftskreislauf*). Changes in the credit volume are only later reflected in the "circulation of money" (*Einkommenskreislauf*). The problems of credit creation (by the banks) are discussed in great detail, especially those related to the extension of credit in excess of the supply of savings (*"zusaetzlicher" Kredit*). Such "additional" credit expansion (which is in most cases used for the acquisition of real capital) is, according to the author, one of the most important disequilibrating factors, because it tends to increase the money supply without a corresponding increase in the supply of consumers' goods; thus a new equilibrium can be reached only at a higher price level (unless this tendency is compensated by other equilibrating factors).

The second volume of the book deals with the application of monetary theory to a great variety of economic problems. In the fourth chapter (pp. 307-522), which is based mainly on Wicksellian and Keynesian ideas, the central thesis of the book is developed. The factors determining the "neutrality" or "non-neutrality" of money are analyzed in detail, largely in terms of the Wicksellian divergence between the market rate and the "natural" rate of interest. The greater part of the discussion, however, is devoted to a critical restatement of the modern theories of saving and investment, income and employment. Emphasis is placed (in contrast to Keynes) on the problems of hoarding and dishoarding, and changes in inventories. The problems of "forced" saving and misdirection of investment are fully analyzed; the theories of the multiplier and the acceleration principle are discussed (with approval), and the liquidity preference theory of interest is criticized and rejected. This chapter also includes a general discussion of business cycle theories which involves much repetition of earlier arguments.

In the short fifth chapter (pp. 523-91) the author is concerned with purely institutional problems. He discusses in theoretical terms the limitations of the functions of money and credit in different types of economic systems, *viz.*, a free market economy, a "regulated" economy, and a totally planned and centrally administered economy.

In the sixth chapter (pp. 592-745) the instruments and principles of monetary and credit policy are described and analyzed. In the discussion of policy objectives the author favors an active monetary policy directed toward the full utilization of resources. He expresses his preference for a managed monetary standard aiming at the stabilization of the wage level (index of average nominal wages) or the stabilization of a weighted price average in which wages are included.

An excellent bibliography and index complete the text.

It is surprising to find in a recent book by a German monetary expert practically no reference to postwar monetary developments in Germany. The currency reform of 1948 is not even mentioned.

The fact that the author regards the rôle of money in international relations as a matter which lies outside the scope of his investigation is regrettable. It is one of the shortcomings of an otherwise comprehensive survey of the problems of monetary theory and monetary policy.

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Business Finance; Investments and Security Markets; Insurance

Corporate Income Retention, 1915-43. By SERGEI P. DOBROVOLSKY. (New York: National Bureau of Economic Research. 1951. Pp. xviii, 122. $2.50.)

This book is the most recent of the studies in Business Finance under the Financial Research Program of the National Bureau. The object of the study (p. 1) is "to ascertain whether corporate income retention has followed stable patterns during the years analyzed." More specifically, the author analyzes the extent to which variations in income retention have been associated with changes in corporate profitability and how closely these variations are related to changes in corporate investment.

After defining his terminology, Dr. Dobrovolsky begins his study by presenting charts and data on the net income, dividends, and retained income of all manufacturing corporations (based on U. S. Treasury Department, *Statistics of Income, 1922-43*), and similar information on a sample of 45 large companies, and 73 small and medium-sized manufacturing companies for slightly longer periods. In analyzing these time series, attention is directed to the proportion retained at various levels of corporate net income, how changes in net income from one year to the next were reflected in retentions and dividends, the trends in corporate retentions, and the extent to which income retentions were affected by factors other than profitability. The author finds that net income retention usually began when corporations were earning in excess of 5 per cent of net worth. Below that level dividends were paid in excess of current income. In examining annual changes in net income and retained income a fairly stable relationship appeared. On an average, corporations tended to disburse or contract dividends to the extent of about 20 to 30 cents for each increase or decrease of $1 of net income (per $100 of net worth). In other words, while the corporate propensity to save varied with the level of income, the marginal propensity to save remained fairly stable above a certain level of net income.

* The views expressed are those of the reviewer and do not necessarily represent those of the organization with which he is connected.

After this analysis of aggregates of companies, the patterns of relationship between income, savings, external financing, and physical asset investment of individual companies in single years and in longer periods are examined. Differences between companies also are considered. In this phase of the study Treasury data on all mining and manufacturing companies are used, as well as the samples of large, and of small and medium-sized companies. In periods of heavy investment, both internal and external financing tend to be absorbed. In periods of cyclical contraction there tends to be a disinvestment in physical assets, dissaving, and a release of external financing on balance. However, the pattern is less distinct for the samples of large and of small and medium-sized companies. In the concluding chapter, the relations between the rates of physical asset expansion and retained income are examined. It is interesting that even when the rate of expansion was highest during the period studied, the absolute amount of retained income exceeded the net amount of external financing absorbed. The findings of the study are summarized in the first chapter.

This carefully prepared and well-documented study provides more complete factual information on an important controversial area than has previously been available. The findings will be of greater interest to general economists than to students of corporation finance. The reader found that the study in large part confirmed assumptions that he had made rather than being a source of new ideas, but a statistical study of this type is valuable in providing concrete information where such has been lacking. It should be borne in mind that the data pertain largely to the manufacturing sector of the corporate economy, and that such important areas as the railroads and the utilities are not covered.

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Public Finance

Effects of Taxation: Corporate Financial Policy. By Dan Throop Smith. (Boston: Grad. School of Bus. Admin., Harvard University. 1952. Pp. xii, 301. $3.75.)

Effects of Taxation: Depreciation Adjustments for Price Changes. By E. Cary Brown. (Boston: Grad. School of Bus. Admin., Harvard University. 1952. Pp. xiii, 161. $3.25.)

These two books constitute the fifth and sixth volumes in the study of the effects of taxation upon business sponsored by the Harvard Graduate School of Business Administration. As is typical of the series, the studies are not expected to advance positive conclusions based upon substantial empirical work of actual effects of taxation upon business, but to explore the problems by careful analysis developed in light of a background of empirical information.

The Smith study considers the effects of federal income taxes upon the choice of methods of corporate financing. Smith emphasizes the need for

considering the effects of taxation in their proper perspective, and devotes much space to the entire complex of forces conditioning the effects of taxes on financial policy in order to obtain this result. Primarily the study is analytical: the author attempts to explain what businessmen can be expected to do in response to the effects of taxes upon their cost-profit situations. But substantial empirical work was done as well; 175 men active in the business and financial community were interviewed to determine their actual reactions in respect to the tax. The results are not formally tabulated and presented separately, but are used as a basis for appraising the conclusions reached by the analytical approach, and particularly in determining the significance of tax factors in business decisions. The author does not seek to give a quantitative appraisal of the effects of the taxes, and offers few categorical conclusions; one important implication of the entire analysis is the realization that so many complicating influences affect corporate financial policy that simplified conclusions about tax effects cannot be made.

Separate treatment is provided for widely held and closely controlled corporations, with emphasis on the difference in behavior in the two cases. With the former, analysis is made of the effects of corporate income taxes upon the relative merits of debt, preferred stock, and common stock financing. Smith emphasizes the fact that the tax is neutral so far as debt financing is concerned; it does not actually reduce the cost of borrowing unless the money is used in such a manner that no increase in gross earnings is expected. The tax makes necessary a higher rate of return to cover preferred stock dividends and thus discourages this method of financing. So far as common stock is concerned, the problem is more complicated, and the author devotes substantial attention to the question of the nature of the cost which results from the sale of additional common stock. He reaches the conclusion that the dilution of prospective earnings per share is the most significant measure of cost. If stock sells below its asset value, dilution is almost inevitable if additional stock is sold. The corporate income tax, by reducing the price of the stock, will increase the cost of new stock issues and thus discourage them.

On the other hand, the corporate tax, while lessening funds available for expansion, does not make expansion from retained earnings more costly. The entire income tax structure encourages retention if stockholders as a group wish to save their earnings.

With closely held corporations the issues are somewhat different. The over-all income tax structure, with favorable treatment of capital gains, encourages wealthy persons to take over existing closely held corporations, and overcomes in part the factors discouraging investments in smaller concerns. The tax structure also encourages creation of complex capital structures, particularly to allow retirement of senior securities from earnings. The strong incentive given by the tax structure for the retention of earnings is noted, as well as the efforts made by law to check excessive retention. In a final chapter the tax obstacles in the way of withdrawal of part interest from a small corporation are noted.

The author avoids policy recommendations, except in respect to the treat-

ment of partial withdrawal of interest, and the suggestion for more liberal treatment of capital losses as a means of encouraging the preservation of small businesses.

On the whole, the volume represents a useful addition to the literature. The reader may be disappointed at the somewhat meager results of the empirical work and the lack of quantitative appraisals of the effects of the tax structure on such questions as debt-financing. But the complicated nature of the problem has limited contributions along these lines. Perhaps the chief deficiency in the whole analysis, and one recognized by Smith, is the lack of knowledge of the extent to which the corporate income tax is shifted. The analysis is based upon the assumption—explicitly stated—that shifting does not occur; to the extent that it does, many of the conclusions are not applicable. Much more study of the incidence of the corporation income tax is urgently needed. The author also does not attempt to develop the related question of the significance of the tax structure and government expenditures for the general interest rate level; modifications in the latter would alter some of the conclusions reached.

The Brown volume deals with the tax aspects of a problem which has been brought into prominence in recent years by inflationary trends—that of the significance for measurement of depreciation and business profits of the gap which has arisen between original cost and replacement cost of capital assets. In inflationary periods depreciation charges based upon original cost do not supply sufficient funds to maintain intact the real capital assets of the firm; thus in a sense current profits are overstated. Essentially the present tax treatment includes in current income the increased value of existing capital assets produced by price increases. The question is closely related to that of inventory accounting, which has received much more attention in the literature, and was analysed in detail from a tax standpoint in an earlier volume in the Harvard series.[1] Brown's study, facilitated by his extensive background in both accounting and economics, is the first thorough analysis of the depreciation question from a tax standpoint.

The early chapters are devoted to a discussion of the significance of price changes for business firms, a survey of business practice in experimenting with replacement cost depreciation for nontax purposes, and an estimate of the annual magnitude of the gap between original and replacement cost depreciation. The author's estimate is a figure of from $2 billion to $2-1/2 billion in the postwar years. Only limited empirical study of actual use of replacement cost accounting was possible, since experiments were discouraged by accountants and government agencies.

Chapter 4 contains an evaluation in terms of equity and economic effects of a shift to replacement cost for tax purposes. Brown regards a complete change in the concept of taxable income from monetary income to real income, if administratively feasible, as one which would increase the theoretical equity of the tax structure. But he regards the allowance of replacement cost depreciation, in the absence of such a general change, as undesirable from an

[1] J. K. Butters, *Effects of Taxation on Inventory Accounting and Policies* (Boston, 1949).

equity standpoint, since it would discriminate against the holders of financial assets compared to the holders of depreciable assets.

So far as economic effects are concerned, it is concluded that the use of replacement cost depreciation for tax purposes would be a destabilizing influence, whereas its use for corporate reports and policy purposes would be a stabilizing influence. Brown regards the former influence as the more significant one. From the standpoint of long-run effects in an inflationary period, the replacement cost basis would increase the level of capital formation, but this result is not necessarily advantageous.

The latter portion of the book is devoted to a survey of the various alternative methods of adjusting depreciation accounts for capital-asset price changes, and of the question of the appropriate index for making the changes. A basic conflict is encountered, in respect to both these questions, between procedures which are theoretically logical and those which are administratively feasible. At best the result can be only an uneasy compromise. In regard to methods the problem of variations in the extent of regularity of replacement is a serious complicating factor. In the selection of an index, the diversity in variation of prices of various types of capital assets and the fact that quality of capital goods increases over the years pose almost insuperable problems, if any high degree of accuracy is considered essential.

In conclusion, Brown favors the continuation of the original cost basis, primarily because it results in less inequity for the holders of financial assets as compared to the holders of capital assets, and partly because of the problems in the establishment of a suitable method of adjustment and a usable index. While some persons will question these conclusions through a different weighting of conflicting considerations, Brown's study demonstrates clearly that there is no simple solution to the problem, and that the obstacles to a more satisfactory treatment are very substantial. The book is a very worthwhile addition to tax literature.

John F. Due

University of Illinois

Effects of Taxation on Industrial Location. By Joe Summers Floyd, Jr. (Chapel Hill: University of North Carolina Press. 1952. Pp. ix, 155. $3.00.)

The basic purpose of this brief volume seems to be to ascertain tax differentials among specified cities in nineteen states and specified rural sites in thirteen states. The method assumes that identical, particularly described textile, furniture, and tobacco manufacturing plants are alternatively located at each of several sites (there is an assumption of city-rural sites in the instance of the tobacco plant). Then the author computes the general tax liabilities under local legal and administrative conditions for purposes of comparison. In general the taxes examined appear to include the state income, franchise, and state and local property taxes. The author seems to exclude such taxes as gross receipts licenses of Virginia cities, flat-rate licenses of Alabama

cities, and income taxes of Ohio cities. He appears also to omit all state excises imposed under general sales tax laws on lubricants and in the form of gasoline taxes on liquid fuel used incident to manufacturing, public utility taxes collected from producers and remitted to the state, and other miscellaneous revenue measures.

The data presented enable the author to estimate the general tax bill for a selected year and the differentials among the obligations which the manufacturing corporations described would have to meet at the several sites. The evidence indicates that the amounts due would vary widely from state to state and even from site to site within individual states. The difference between the lowest and the highest tax bill would amount to 2 per cent of the hosiery manufacturing corporation sales and 3.4 per cent of the furniture corporation sales. The differential among the computed tax bills in the case of the tobacco manufacturing corporation would be less than 1 per cent of sales. The intrastate differentials of the hosiery corporation range from 0.02 per cent of sales in the Kentucky rural sites examined to 1.26 per cent in New Jersey urban sites. The study discloses some significant results with respect to the size of the tax bill in particular states. For example, it is apparent that the hosiery manufacturing tax loads as analyzed are substantially lower in Connecticut and Massachusetts than in Arkansas, Georgia, Mississippi, North Carolina, South Carolina, and Virginia, notwithstanding the widespread impression that textile manufacturers have moved from New England to these states to avoid high taxes. In viewing the relationships between taxes and industrial development, the author, like other students of kindred subject-matter, finds little evidence of correlation. Notwithstanding the lack of a definable relationship, the author expresses concern over the lack of uniform state and local revenue practices and develops suggestions for correction.

The study deals with tax differentials, but it does not show that they affect industrial location. Also, there are some unfortunate errors of detail as, for example, the misunderstanding (pp. 92 and 93) of the Kentucky property classification statutes. Although the incomplete coverage of manufacturers' taxes might seem unfortunate, the failure clearly to set out what is and what is not included is more objectionable.

Viewed as a whole, the book seems clearly to make a net contribution to the analysis of manufacturing taxation. The text is presented in an attractive, clear, and vigorous style. The suggestion that the study can be helpful to both public officials in policy determination and to industrialists in the selection of manufacturing sites certainly represents a modest viewpoint.

JAMES W. MARTIN

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International Economics

Trade and Payments in Western Europe. By WILLIAM DIEBOLD, JR. (New York: Harper and Brothers, for the Council on Foreign Relations. 1952. Pp. xvii, 488. $5.00.)

This book is a well-documented analysis of the efforts toward economic cooperation among western European nations since the war. In three main parts, each roughly a third of the text, the author analyses (a) the development and operation of the European Payments Union and its antecedents; (b) the efforts to remove import quotas, reduce tariffs, and curb discriminatory practices of cartels and governments; and (c) the experience of Benelux and the proposals for other customs unions. This is the second in a three-volume series, sponsored by the Council on Foreign Relations, on economic problems of western Europe. The first was a study of the European Recovery Program, *The Economics of Freedom,* 1950, by Howard Ellis and the Council staff. The third volume, now in preparation by Diebold, will deal with attempts to unify certain industries, like the Schuman plan for steel and coal, and steps toward economic integration other than customs unions.

So far as I know, the present volume is the most comprehensive study available in English of European economic cooperation. It is a timely book on one of the big problems of our day. The approach is aptly put by the author: "This book is neither an exhortation to the Europeans to cooperate nor an apologia to the Americans on behalf of the Europeans, showing how hard it is to cooperate. It is simply an attempt to help understand the events of these four years." In his conclusions, the author is equally modest. After presenting fairly the pros and cons of each issue, he cautions repeatedly against sweeping generalizations. Concerning customs unions, he emphasizes both the trade-diverting and the trade-creating effects. In evaluating EPU, after detailed analysis of its operations, he finds the material results relatively small and raises serious doubts whether EPU alone means a measurable advance toward general convertibility of currencies.

The specialist in international trade, as well as the more general reader, will find this a rewarding book. For the former, in particular, there is an excellent critical bibliography of some thirty pages. The author is unusually generous in giving credit to others for even the smallest ideas.

J. RICHARD HUBER

University of Washington

International Cartels: Economic and Political Aspects. By KENNETH L. MAYALL. (Rutland, Vermont: Charles E. Tuttle Co. 1952. Pp. x, 173. $2.75.)

This report of research in the literature of cartels is notable chiefly for the positiveness of its conclusions. The author sets "objectiveness" as his goal, and undertakes to subordinate wishful thinking on the cartel question to "the plane of reality." The reality that emerges is familiar: international cartels are so ingrained in thinking and practice throughout the world that they

must be accepted as here to stay. A unilateral American policy of international trust-busting would be futile, and the substitution of governments for private participants would result in added dangers and no probable improvement in conduct. This position is quite defensible even though it is not the only position which the evidence can be made to support.

The author is unwilling, however, to permit this inevitable movement to run rampant without controls, and at this point his realism becomes somewhat diluted. He proposes: (1) registration of international private agreements, and the establishment under the United Nations of a technically competent legal tribunal to pass judgment on violations of international antitrust regulations; (2) guarantee of adequate consumer representation in all intergovernmental commodity control agreements; and (3) fair and impartial distribution of raw materials under control of a nonpolitical international economic council. These recommendations are likely to appear as decidedly less than "realistic" to anyone familiar with the difficulties actually encountered in the far simpler task of regulating private domestic industries in single countries, or to anyone who has won battle-scars as an active participant in any recent American attempts to set up effective consumer representation as a formal adjunct of regulatory agencies.

Among the more interesting portions of the book are the sections devoted to cartel policy conflicts between the Departments of Justice, Agriculture and State, and to the probable resurgence of industrial and financial concentration in Japan. The author's involved style makes it difficult at times to follow his argument.

Ben W. Lewis

Oberlin College

Der Aussenhandel zwischen marktwirtschaftlich organisierten und zentralgeleiteten Volkswirtschaften. By Willi Graf. (Zuerich and St. Gallen: Polygraphischer Verlag A.-G. 1951. Pp. 190.)

This book deals with the foreign trade between national economies organized on the basis of the market system of economy and those organized on the basis of direction by central authorities. The first section of the book gives a brief textbook-like description of the functioning of the private enterprise system and of foreign trade between market economies. The second section gives a description, in similar terms, of the functioning of a state-planned economy and of foreign trade between planned economies. In the third section which deals with the trade relations between capitalist and socialist economies, the author gives an able and well-informed analysis of the theoretical problems involved. However, a more concrete discussion of some of the actual trade agreements—in particular, the history of the post-war trade relations between Sweden and the Soviet Union, which well illustrates the practical problems arising in this connection—would have added to the value of the book.

When the book went to press (July 1950), the fate of the International Trade Organization was not yet decided. Since then, opposition from American

economic groups—both those favoring more liberal trade agreements and those favoring more protection—induced the Truman administration to refrain from submitting the Havana Charter for an I.T.O. to Congress for ratification. The Havana Charter constituted a compromise between the different groups of countries in the private enterprise camp. While provisions were made for state trading by socialist countries, these provisions were not a major point of controversy, quite aside from the fact that Russia was not represented in Havana, and that she would not have permitted her satellites, two of which had attended the Havana Conference, to join the I.T.O. in any case.

The inability of the free enterprise countries to accept common rules of desirable conduct in their trade relations shows that the antagonism between capitalist and socialist countries is only one of the basic problems in the field of international economic affairs. Within the private enterprise camp, the economically underdeveloped countries find themselves aligned against the countries with advanced industrial economies; and countries whose inability to deal effectively with the problems of inflation and overpopulation has put them in balance-of-payments difficulties find themselves aligned against the countries with "hard" currencies.

Dr. Graf makes it quite clear that the main difficulty in dealings with the Soviet Union and her satellites is not, as in the case of trading among private enterprise countries, the effect of trade on balances of payment. The planned economies of the Soviet sphere are import-oriented rather than export-oriented. They export only because they need funds with which to pay for needed imports, and they have no incentive to create an export surplus. At present, this is due to the high rate at which industrialization is being pushed, with the resulting emphasis on the use of resources for domestic investment. Moreover, the chances are that under a system of the Soviet type, the ruling group could always think up projects to which resources have to be diverted, even if the Soviet sphere were to attain so high a level of income that the proportion of income saved might reduce consumer demand below the level required to keep resources fully employed.

In this connection, Graf points out that it is doubtful whether Russia's distress export sales of raw materials and foodstuffs during the period of her first five-year plan, which coincided with the Great Depression, can be classified as dumping. The Soviet currency is entirely a domestic currency and any foreign exchange rates relating to it are arbitrary and fictitious. Thus, it is almost impossible to make cost comparisons between Russian-made goods and competing goods sold by private enterprise economies which would indicate whether a Russian export conforms to the definition of dumping.

The granting of most-favored-nations treatment and of tariff concessions is meaningless in the case of a government that can decide about the quantity, composition, and origin of its imports by actual purchasing policies rather than only by affecting import prices through the medium of tariff duties. Thus, the United States, in its trade agreements with the Soviet Union, insisted that Russia obligate herself to purchase a minimum amount of goods, stated in value terms (millions of dollars), from the United States.

The principal obstacle to trade between capitalist and socialist countries

appears to be the difficulty which private importers and exporters encounter in dealing with the foreign trading agencies of socialist governments which can act as monopolists and monopsonists. These difficulties are especially pronounced in the case of those desiring to export to the Soviet sphere. Like the giant corporation buying from small business enterprises, the foreign trading agency of the Soviet type is able to insist on relatively low prices in buying from enterprises in the capitalist countries. Moreover, the private firm which produces for Russian consumption, and expands its productive capacity in that connection, runs greater risks of potential excess capacity than if it produced for a diversified group of competing customers, withdrawal by none of whom would greatly damage its business outlook. The Russians are quite cognizant of the favorable position in which their monopsonistic power puts them. Graf quotes utterances by Mikoyan, the boss of the Soviet trading organizations, which show that the Communist regime greatly resents any attempts by private enterprisers to protect themselves by combining in cartel-like agreements for purposes of exporting to Russia. Mikoyan threatens such insubordinate capitalists with the withholding of purchasing orders from them. Of course, even if government arrangements or private cartels could be effective in equalizing the market power of private exporters with the market power of Soviet trading agencies, such arrangements would not be desirable because they mean a gradual expansion of the government-directed or cartel-directed segments in the free enterprise economies. Business circles in Germany and Japan which are hopeful of expanding their trade with Russia, Eastern Europe, and Red China may well pay heed to Graf's intelligent analysis.

WERNER BAER

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Business Administration

Methods of Wage Payment in British Industry. By NORMAN C. HUNT. (London: Sir Isaac Pitman & Sons, Ltd. New York: British Book Centre. 1951. Pp. xiv, 160. $4.00.)

Methods of Wage Payment in British Industry is written primarily as a textbook for students of management. It is essentially a descriptive and nontheoretical treatment of the methods of paying rank-and-file workers.

Hunt starts his discussion of wage payment systems by casually commenting on the use of nonfinancial incentives and on the limitations of financial incentives. As examples of the former he cites the Hawthorne Experiments and the work of R. B. Wolf in an American paper and pulp mill. He considers the weaknesses of financial incentives to be: (a) social security from the cradle to the grave: (b) high taxation; (c) diminishing returns, and (d) the "restrictionism" of organized labor and organized capital.

The remainder of the book consists of a ten-page chapter on the time rate system, a four-page chapter on conditions of production most suited to a

system of payment results, and equally brief chapters on (a) the extent of payment by results, in British industries; (b) trade union attitude to payment by results; (c) the individual piece-work system; (d) problems of rate-fixing; (e) premium bonus systems; (f) group incentives; (g) merit rating, and (h) profit-sharing and co-partnership.

The main contribution of this book is found in the chapter on the extent of payment by results in British industries. Hunt quotes a 1949 survey by the Ministry of Labor which shows that 29 per cent of the manual workers in the industries covered by the study were paid by results. (The study did not include: office workers, shop assistants, travellers, clerks, most salaried workers, or those engaged in agriculture, coal mining, railway and shipping services, longshoring, the distributive and catering trades, the entertainment industries, commerce and banking, and domestic service.) After citing these statistics, Hunt succinctly describes the prevailing wage practices in some of the more important British industries, *e.g.*, iron and steel, shipbuilding, wood working, building, printing, textiles, etc. Unfortunately, Hunt sticks to a narration of details rather than making a critical analysis.

In the final chapter the author attempts to establish the criteria of a good incentive plan (*i.e.*, systems of payment by results). He lists the following: (1) Fairness: "The system must be fair to all concerned and contribute to the benefit of both employer and employee," (2) No rate-cutting. Mr. Hunt advises that . . . "in order to achieve accuracy in rate fixing, it will be desirable in many cases to employ time-study." (3) Simple: "It is essential that the wage incentive system be reasonably simple, so that the ordinary worker can understand it and estimate the amount of bonus he is earning. . . ." (4) Balanced. "It is important, too, that the wage incentive system should not upset the natural balance of wage rates within the plant. . . ." (5) Complaints. "Finally, there should be channels through which the workers can make enquiries regarding their wages, and, if necessary, lodge complaints or appeals."

The critical reader will wonder as to the meaningfulness of some of Hunt's criteria. Anyone who has attempted to administer wage incentive installations will realize that "fairness" is a fuzzy concept. The criteria used for judging fairness are numerous and are often contradictory. Case studies of wage incentive installations indicate that frequently management's value judgments as to what is fair or unfair are antithetical to the views of the workers.

The difference in point of view between workers and management is highlighted when one analyzes rate-cutting. Hunt's criterion of "No rate-cutting" becomes meaningless when one recognizes the existence of fundamental differences in definition. To Hunt, a rate cut occurs only where a standard of production is changed without a corresponding change in the method of production. From the point of view of the worker a rate cut may be defined as any decrease in rate of pay per unit of output. Hence, if, due to a mechanical improvement, a worker's output is doubled, and his pay is not increased in direct proportion to the increase in his output, he may argue that his rate has been cut. In actual practice one finds that workers frequently

compromise on what they are willing to accept as their "fair share" of increased productivity; however, very seldom do they accept Hunt's definition.

Hunt's book adds little to our understanding of the use of various wage payment plans. Part of this is due to his tendency to oversimplify, part is due to his failure to consider recent research on the efficiency of both financial and nonfinancial incentives (*e.g.*, he limits his discussion of nonfinancial incentives to a terse report of the study of behavior at the Hawthorne Works of the Western Electric Company conducted twenty odd years ago, and to R. B. Wolf's work done at the turn of the century). Part is due to Hunt's failure to analyze critically problems encountered in administering systems of payment by results. If he had made a rigorous study of the use of wage payment plans he should have seen that there are inherent in most systems of payment by results certain weaknesses which tend to limit their efficacy in paying rank-and-file factory workers. These limitations may be summarized as follows:

1. *Precise standards of performance cannot be established.* Machines, men and raw materials may vary from day to day and from hour to hour. It is practically impossible to completely standardize job conditions. Even if jobs could be standardized, there would be room for considerable debate as to "correct" standards. Weaknesses in the technique of time study (*i.e.*, human errors in reading the stopwatch, in leveling, and in determining fatigue and delay allowances), prevent the determination of exact and correct standards of performance.

2. *The use of a system of payment by results sharpens and accentuates differences between the goals of management and those of workers.* The theory underlying the use of wage incentives holds that a system of payment by results puts men into business for themselves, and in pursuing their own self-interest workers will increase their rate of output; hence, it is reasoned, wage incentives provide a technique for stimulating increased production by enabling workers to increase their earnings. The weakness of this logic arises from the fact that the worker's self interest not only prompts him to increase output, but also encourages him to fight for lenient standards of output. Wage incentives directly translate into money income differences of opinion as to appropriate standards of output and proper allowances for variations in job conditions.

3. *Wage incentives tend to distort traditional wage structures.* The use of a system of payment by results injects a dynamic element into the wage structure. Traditional wage differentials are often upset. From the workers' point of view such changes frequently appear illogical and unreasonable. This distortion of the wage structure seems to be inherent in the use of systems of payment by result in remunerating rank-and-file factory workers. It arises out of (a) differences in potential earnings on different jobs; (b) difference in the ability of workers on the same job, and of the individual worker on differents jobs; (c) differences in the pressures that groups of workers may apply in loosening up standards of output.

These debilities do not necessarily nullify the value of systems of payment

by results; but, they do indicate areas of study that should be covered in a book directed toward preparing students for management. Unfortunately, *Methods of Wage Payment in British Industry* describes only the more common systems of remuneration and the more frequently discussed weaknesses of each. It fails to probe deeply enough to come to grips with the fundamental problems of wage and salary administration.

WILLIAM B. WOLF

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Marketing Research. By DAVID J. LUCK and HUGH G. WALES. (New York: Prentice-Hall. 1952. Pp. viii, 532. $5.75.)

Reflecting the increasing interest in marketing research both among business men and our academic institutions, this introductory text in the field is designed to provide an "adequate and up-to-date treatment" of the subject that will serve the needs of practitioners and college students alike. Like most of its predecessors and contemporaries,[1] *Marketing Research* is concerned primarily with techniques and applications. It contains little that is new in either of these areas.

The volume is organized into four parts as follows: (1) getting acquainted with marketing research; (2) sources of marketing data; (3) techniques of marketing research; and (4) the application of marketing research. Each part is preceded by a brief introductory statement outlining the nature and significance of the material covered in the chapters which follow. The reviewer has little fault to find with the organization of the material. He believes, however, that Part IV could well have been enlarged without unduly lengthening the book. Too much emphasis on *techniques* and too little stress upon *applications* have characterized most textbooks in this field. Moreover, for convenience in use, he wonders why the "Suggested Readings by Chapters" are not listed at the close of each chapter rather than following the appendix. Furthermore, "Marketing Research as a Career" seems out of place immediately following "Organization of Marketing Research" and preceding "Secondary Data." A more logical place for discussion of the subject would seem to be at the beginning or the end of the book.

So far as the text matter itself is concerned, the reviewer was pleased with the recognition accorded the scientific method—"The one great criterion that distinguishes research from [non-research] procedure is *scientific method*" (p. 5); with the helpful figures and illustrations, particularly those in chapter 15; with the careful presentation of the various research techniques involved in the solution of economic problems—chapters 6-16; and with the wide range of reference material presented.

On the other hand, he was disappointed with the treatment of sampling, despite the additional material presented in Appendix A; with the lack of

[1] For example, American Marketing Society, *The Technique of Marketing Research* (McGraw-Hill, 1937); L. O. Brown, *Marketing and Distribution Research* (Ronald Press, 1949); R. Ferber, *Statistical Techniques in Market Research* (McGraw-Hill, 1949); M. S. Heidingsfield and A. B. Blankenship, *Market and Marketing Analysis* (Henry Holt, 1947); and J. H. Lorie and H. V. Roberts, *Basic Methods of Marketing Research* (McGraw-Hill, 1950).

greater explicitness in certain statements such as ". . . there remain ahead three steps without which the research will not bear fruit. One of these [is interpretation] . . ." (p. 323) (but the other two are not mentioned specifically); and with the lack of uniformity and completeness in footnote references. In many instances, neither names of articles from which quotations are taken nor page numbers in the periodical noted are shown.

The reviewer was disappointed that neither review and discussion questions nor short cases and problems related to the subject matter were included. Since he is convinced that effective instruction in marketing research necessitates active student participation in various projects involving the assembly of pertinent information upon which sound business decisions may be based, he hopes the authors will give proper consideration to including sample projects when *Marketing Research* is revised. It is possible, of course, that such projects are to be included in an accompanying *Teacher's Manual.*

It is all too easy to criticize, even on a constructive basis, and fail to recognize the contributions of writers in economic literature. Certainly *Marketing Research* reflects careful planning, conscientious if not complete documentation, and broad familiarity with the literature in the field. And it includes the major topics which an introductory course should provide. The authors, well-acquainted with other textbooks in the field, have sought to develop various concepts of marketing research which their teaching and business experience have revealed to be most important. Despite its minor shortcomings, there is little doubt that it will find favorable acceptance in the academic field and be used by numerous young men seeking a better understanding of the nature, scope, and applications of marketing research.

DELBERT J. DUNCAN

University of California

Industrial Organization; Public Regulation of Business

Lessons of the British War Economy. Edited by D. N. CHESTER. (London and New York: Cambridge University Press. 1951. Pp. xii, 260. $4.50.)

D. N. Chester deserves the thanks of economists for collecting these thirteen essays which review some of the principal developments in the control of the British economy during the war. Most of them were written by economists who served as wartime civil servants. The volume will be particularly valuable to American economists who do not have time to read lengthy official histories or detailed monographs: it is written in language which they can understand and addresses itself to problems in which they are interested. It is, however, a collection of reminiscences rather than an economic analysis of techniques of controlling a war economy.

Chester's own contribution, as a political scientist, is an essay which should give American readers some "feel" for the organization of the British government at "high levels," and the important ways in which its functioning differs

from that of the American government at similar levels. One of the problems which he discusses most interestingly, however, is the dilemma of the academic "temporary"—torn between the necessity to take broader, deeper, and longer views if he is to make the only contribution of which he is uniquely capable; and the apparent necessity to immerse himself in practical detail if he is to be effective. Crossing the Atlantic does not blur this dilemma. The impression left by most of the other essays in this volume is that it was usually resolved in London as in Washington by suppressing one's academic impulses. The "lessons" drawn by the authors are typically empirical and "practical."

Austin Robinson's essay on "The Overall Allocation of Resources" is a case in point. He divides the war into "phases," and traces from phase to phase the shifts in production, the associated changes in "limiting factors" on production, and the modifications which were required (or made) in allocation machinery and techniques. Examples of Robinson's lessons are: "We took too little account of the limits of local labor supply"; "there was . . . far too little appreciation of the possibilities of subcontracting."

Other practical examples are contained in essays dealing with specific problems of allocation and rationing by Ian Bowen (control of building), Percy Ford (allocation of timber), Richard Pares (work of a departmental priority officer), and W. B. Reddaway (consumer rationing). Bowen is particularly convincing (and "practical" in the best sense of the term) in arguing the necessity of a large measure of devolution in allocation machinery (a lesson the War Production Board learned slowly and reluctantly). Those who have had experience with similar schemes will not be surprised to learn from Bowen that the initial allocation of building labor was essentially an attempt to guess the *status quo,* and that subsequent changes usually involved decisions at the Cabinet committee level. Ford explains the special problems of allocating a material with a multitude of diverse uses and users. He is more aware than most of the authors that the suppression of the price system creates difficulties which are costly (*e.g.*, in scarce manpower) to overcome, if they can be overcome at all. Pares tells an interesting story of controls from the point of view of the individual department—in his case the Board of Trade, mainly responsible for civilian supply. His perpetual problem was to obtain from the various allocating authorities allotments of steel, timber, fuel, manpower, etc., which were reasonably in balance; but he thinks this problem was simpler for the Board of Trade than other Departments because they learned (a) that there is no "irreducible minimum" of civilian consumption, and (b) strict balance in the output of various consumption goods is not necessary. I would argue that there is no essential difference in these respects between civilian requirements and those of the services.

Reddaway has interesting and shrewd comments on problems of consumer rationing. On specific vs. group ("point") rationing he tells us that the British began with specific rationing because of presuppositions carried over from World War I; and shifted toward group rationing not mainly because of the economists' "freedom of choice" argument but because of the practical difficulties in having large numbers of separate schemes and coupons. He does

not think this trend can go all the way because the practical administrative difficulties in a general expenditure ration would be "insuperable."[1] On the problem of enforcement he writes the last word: "The successful enforcement of a rationing system and the avoidance of a black market is not primarily a matter of test shopping, flying squads and the like, but rather of devising a rationing system which will be relatively easy to enforce, and which will, indeed, to a large extent 'enforce itself' " (p. 192).

Two other accounts of successful operations based on a systematic devolution of functions are given by G. C. Allen (concentration of production policy) and A. W. Menzies Kitchin (local administration of agricultural production). Concentration of production in many civilian industries (to release labor and factory space) was achieved by a staff in the Board of Trade which was minuscule by American government standards. Essentially it operated by laying down general rules and objectives, and letting firms get together to form groups and concentrate themselves in accordance with the rules. Problems which would have been formidable or insoluble with a centralized approach (*e.g.*, defining industries, fixing compensation) almost solved themselves. Objectives were achieved speedily and flexibly. The control of agricultural output was in some respects similar. The Ministry of Agriculture relied mainly on manipulation of the price mechanism to establish the general pattern of production, and delegated to County War Agricultural Executive Committees authority to carry out its policies regarding drainage, tillage, use of fertilizers and imported feeding stuffs, the employment of farm labor, and farm management. By 1943, with a very moderate increase in the labor force (much of it unskilled) the net output of agriculture in the United Kingdom had increased by 70 per cent measured in calories or proteins, and by 30 per cent in money values at fixed prices.

E. F. Nash in his essay gives a less favorable account of the control of agricultural prices, which degenerated, in his opinion, to a form of collective bargaining. He also tells the story of the stabilization of the official retail price index with its 1904 weights and the associated story of the food subsidies. The problems and their solutions have an Alice-in-Wonderland quality. By 1947 Mr. Dalton was increasing the subsidies (and reducing the prices) on "high leverage" rationed items in the index like sugar and eggs to offset the effect of his increase in the cigarette tax!

Two essays discuss the impressive development of British official statistics during the war. Richard Stone's is essentially an historical digression on the White Papers on National Income and Expenditure which have accompanied every British budget since 1941. It is now difficult to realize that before the war there were no British official estimates of national income or of industrial production, and that, for example, no attempt had ever been made to project the balance of payments. Stone writes with the justified enthusiasm of one who played a primary rôle in correcting this rather incredible situation. G. D. A. MacDougall's essay on the Prime Minister's Statistical Section is really

[1] This is simply asserted (p. 185), but the reader can infer reasons from the discussion of enforcement and of "pointing" problems.

addressed to the adminstrative problem of providing a chief executive surrounded by autonomous and well-staffed departments with unbiassed information and disinterested advice. The same problem, of course, exists in the United States, and was "solved" during the war by a succession of individuals and ephemeral agencies in the Executive Office of the President whose relations with the President were highly personal. The Prime Minister's Statistical Section was apparently a similar sort of device, completely dependent on Lord Cherwell's personal relations with Mr. Churchill, taking its flavor from Cherwell, and disappearing with the change in government in 1945.[2]

MacDougall unfortunately says nothing about the substantive aspects of his work—presumably for reasons of security.

The most surprising and disappointing aspect of the volume is the almost complete absence of economic analysis—or even of curiosity about the relevance of economic science to the problems of allocating resources in a wartime economy. The wartime experiences of these economists led them to no reexamination of theory as, for example, J. K. Galbraith's experience in OPA inspired his penetrating essay on the "disequilibrium system."[3] The "lessons" learned by this group were almost exclusively "practical." My impression is that intelligent "temporaries" drawn from faculties of philosophy or classical languages would have emerged with similar "lessons." As evidence, the essay by Pares, a professor of history, is indistinguishable from this point of view from most of the rest.

I felt this lack of analysis most keenly in Austin Robinson's essay on the overall allocation of resources, where it would have been most appropriate. One would never know from reading this essay that there are economic theories about the optimum allocation of resources—that this is, in fact, what economic theory is about. "The golden rule of all planning," Robinson tells us on page 57, "is that it must be done in terms of the scarcest of the resources." This is a peculiar rule for an economist to regard as "golden." It is obviously right in an extreme and trivial case where one resource is scarce and all others free goods. In other cases it is not true that an optimum allocation can be achieved while ignoring constraints imposed on all resources save one. The golden rule of economic planning, as I remember it, is to make each resource equally scarce (in a precisely defined sense) in all alternative uses. This involves making all intermediate products equally scarce (in the sense that the marginal cost of augmenting each is proportional to its value). Robinson searches throughout his essay for an elusive "limiting factor," never defining what he means and apparently not realizing that if he could find one, it would constitute *prima facie* evidence of bad planning or bad management.

Robinson is tantalizing in a brief discussion of joint planning with the United States. Decisions as to what should be produced by each of the Allies "were in the main taken on pragmatic grounds. . . . In the later stages of preparation for the Normandy invasion attempts were made, it is true, by the

[2] It was resurrected by Churchill in a different form on his return to office in 1951.

[3] *Am. Econ. Rev.*, June 1947, XXXVII, 287-302.

Ministry of Production and American officials in London to work out the criteria for more rational decisions: Some calculations of considerable academic interest were made. . . . But while these calulations may have made some small marginal contribution . . . they had little or no major influence on the broader planning" (p. 47). The only interesting question to Robinson, apparently, is whether a rational economic calculus did in fact have a major influence; his readers will be interested in whether it should and might have had such an influence. Did the "pragmatic" decisions reduce the efficiency of allied use of resources by 1 per cent, 10 per cent, or 50 per cent?

Robinson's answer may well be that predictions regarding the future course of a war are so fraught with uncertainty that a rational calculus is inappropriate. Apparently for this reason he asserts: "It is by no means certain that more careful prewar analysis of an economico-statistical character would have produced substantially better results than the empirical methods which were in fact adopted" (p. 41); and elsewhere: "the power to make rapid change in the disposition of the nation's resources was the greatest war-winning weapon of all" (p. 36). I would agree emphatically with both these judgments, but draw a different moral. An analysis of an "economico-statistical" character based on a single set of single-valued expectations about the future course of the war would be quite likely to give worse results than "empirical methods." But surely our analysis does not have to be so restricted; we can plan for multiple contingencies and we can include flexibility as an essential objective. It is not apparent that the empirical methods used did in fact impart any special flexibility to the economy. If economics is now too retarded to make such analyses, it would seem to be an important lesson of our war experience that we need to develop the necessary methodology. Perhaps Robinson agrees; at least he is convinced that "there was nothing like sufficient background study in peacetime of the economic problems and limitations of conducting a total war" (p. 57).

There is remarkably little in these essays concerning relations between military production programs and the economy. This may be because there is no contribution from the Ministry of Production, and because MacDougall, who must have been involved in such problems, does not feel free to discuss them. Robinson complains generally that there was too little contact and exchange of ideas between the military planners on the one hand and those who were charged with thinking about the use of our total resources on the other; but he appears to have in mind merely the prevention of "overambitious developments by the supply departments and overambitious requirements by the Service departments." Neither Robinson nor any of the other contributors defines the economic problem broadly as the allocation of resources to maximize the accomplishment of military objectives, and shows how this requires simultaneous determination of military requirements and industrial resource allocations. (Ely Devons comes closest to this formulation in his essay on the tribulations of a coordinator of production programs in the Ministry of Aircraft Production.) The mere adjustment of an economy to meet military requirements which have been developed with only vague and casual

reference to resource costs and limitations cannot, except by accident, yield a good solution.[4]

It is perhaps symptomatic of the empirical bias of the authors that not one seriously questions the desirability of the complex system of direct physical controls which evolved in the course of the war, or attempts to explain the conditions in which controls of this type become necessary or preferable. That they are necessary is asserted in most cases, assumed in a few, and taken for granted in the rest.

By contrast there is, as we have seen, a good deal of argument and speculation about the right thing to allocate—manpower, materials, or "value." This discussion is not very illuminating because it lacks theoretical underpinning. Robinson and Bowen both argue that planning and allocating in money terms are unsatisfactory. While there are some practical difficulties associated with making allocations in pounds or dollars, I find the specific arguments they advance quite unconvincing. The argument on which Robinson places main reliance is particularly surprising: "wartime planning in monetary terms was in danger of leading one into the major error of treating all resources as uniform and mobile. In fact, in relation to the very rapid changes that were constantly being required, resources were extremely specific and extremely immobile. Even attempts to plan in terms of manpower were in danger of treating manpower as homogenous and mobile to an extent that was unrealistic. But if you were engaged in cutting the Ensa allocation in order to increase the supply of shipbuilding labor, you were at least under pressure to ask by what concatenation of intermediate transfers, both geographical and occupational, an actress might be transmogrified into a rivet boy. And the dangers of thinking in terms of homogeneous and mobile resources were not confined to manpower. The capital of the munitions industry was highly specific. There was no possible reason to think that 10 million pounds per annum of resources withdrawn from making explosives could be readily converted into 10 million pounds more of resources making aircraft" (p. 54).

Of course it all depends on the precise meaning one attaches to the word "readily." But the whole paragraph sounds less like an economist than like one of George Stigler's "engineers" arguing with an economist. It has been my experience with "practical" men who are not economists that they are too well aware and too much impressed with the specificity and immobility of resources. Economists have a quite special training which permits them to understand that an actress can be transmogrified into a rivet boy by intermediate transfers, and that a shift of demand to aircraft does release resources, directly and indirectly, which permits aircraft production to be expanded. Time is of the essence, of course, and it is a term in the equation about whose coefficient economists know much less than they ought. But no one who has studied the industrial history of the war can doubt that very rapid transfers are in many cases possible. Avoiding British and American examples, witness the re-creation of the German fighter aircraft industry within a few months of

[4] I have developed this point more fully in "Planning Defense Production," *Papers and Proceedings*, 62nd Annual Meeting of the American Economic Association, May 1950.

its destruction by bombs, or the quick recovery of the heavily damaged and distorted Russian industrial economy after the German advance of 1941/42. As Robinson so well states elsewhere: "the power to make rapid change in the disposition of the nation's resources was the greatest war-winning weapon of all." Unduly pessimistic assumptions about the mobility of resources can result in a failure to seize opportunities to produce new weapons, to exploit a success, to make good unexpected losses. Economists have a special responsibility to overcome this sort of myopic pessimism, which seems to me to be far more dangerous than the opposite risk that responsible executives will exaggerate the mobility of resources. Everyone knows that actresses can't make ships; only economists know that in a very significant sense it isn't so.

In reading these essays I looked hard for suggestions which might help to explain an observation which I with many other Americans made during the war. It is now a reasonably well-established fact that it takes two, three, or four times as many Englishmen as Americans to make a motor car, a radio, an airplane (production quantities), or almost any other industrial product. It seemed to me that in performing governmental functions this ratio was reversed—that the British made governmental decisions and executed them with staffs a fraction the size of ours. Now a part of this discrepancy is perfectly natural. One would expect the American government to be larger than the British for much the same reason that the British is larger than the Belgian—it has a larger and more complex country to govern. But it seemed to many of us that there was more to it than this—that the British in many cases at least, had smaller staffs because they operated more efficiently (and to some extent conversely, they were able to operate more efficiently because they had smaller staffs!).

There are a few clues in this volume—all fragmentary and practical, as one would expect. Hugh Weeks, in an essay on Anglo-American supply relationships, suggests two possible explanations in recounting the things in Washington which amazed him: (a) our excessively legalistic bureaucratic thoroughness: "the number and complexity of the forms required to claim for [Lend-Lease] civilian stores is still a legend and a nightmare among those who had to prepare them" (p. 73); and (b) the indiscipline of American civil servants and their departments: "American officials did not seem to be pinned down by the decisions of their superiors as the British were. On any complex problem various American departments would openly and loudly state divergent views" (p. 81).

Chester has some thought-provoking comments on the art of chairing committees and the technique of using committees in government. British committees sometimes work very successfully; it is notorious that ours never do.

One other clue has already been discussed—the apparent willingness of British government departments, in some cases at least, to devolve functions on other departments, local governments, or industry. Every American department I have known wants to do the whole job itself—as well as all related jobs. The "full faith and credit" which the Constitution demands that each State accord acts of other States is conspicuously not accorded any department

or agency of the federal government by any other. Perhaps the different traditions of the British permanent civil service are responsible for a more disciplined, less aggressive attitude toward aggrandizement on the part of British departments which places some restraints on bureaucratic "empire building."

But this is merely suggestive, and the volume contains many warnings that these differences should not be exaggerated. British departments are also autonomous and jealous. At several dozen points I felt an impulse to enter the marginal note "How like Washington!" Devons' whole essay, on the problems of coordinating the separate Production Directorates of the Ministry of Aircraft Production, and the Ministry's procurement program with the planning of the Air Ministry, could have been written with a few changes in names, titles, dates, and language, about almost any American department or agency with analogous functions. One quotation, from a section entitled, "Importance of Informal Contacts," will illustrate what I mean: "The planning directorate used two main lines of attack. Firstly, they engaged in the most subtle forms of spying they could contrive. The most effective was to find some person in a production directorate who had a grievance. . . . The other . . . was to discover officials either at M.A.P., the firms, or the Air Ministry who realized the importance of coordination and were not oversensitive about the prestige of their own directorate, cultivate their acquaintance or even friendship where this was possible, and use them as the main instruments of coordination, especially in an emergency when quick decisions were necessary" (pp. 116-17).

The superior efficiency of the British government is, in any event, no more than an hypothesis. It will, from the character of governmental functions, be difficult to verify by studies of the Rostas type. But with a third of national income passing to or through the government in cold war, and potentially much more in a hot, it would be difficult to think of more important and challenging problems than the measurement and improvement of the efficiency with which democratic governments perform their functions.

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Industry Studies

Woolen and Worsted Manufacturing in the Southern Piedmont. By JAMES A. MORRIS. (Columbia: University of South Carolina Press. 1952. Pp. xiii, 197. $5.00.)

Mr. Morris' description of woolen and worsted manufacturing in the Southern Piedmont is in effect a statement of the competitive geographical advantages afforded this industry in the Appalachian Piedmont of Virginia, the Carolinas, and Georgia versus those available in New England. It is an attempt to answer the intriguing question: Does the recent growth and current

size of the industry represent the beginnings of another large-scale migration similar to that of the cotton textile industry from the historical center in New England to the Southern Piedmont?

Contrasted with "a decrease in the number of all types of equipment except combs between" 1939 and 1951 for the woolen and worsted manufacturing industry as a whole (pp. 69-70), thirty-one new plants were established in the Southern Piedmont between these dates (p. 82). This development differed from the growth of the cotton textile industry in the South, for it resulted largely from the opening of branch plants by New England firms instead of the creation of new firms by southern capital and management as was the case in cotton (p. 70). The Census of Manufactures in 1947 stated that 4.6 per cent of the establishments, 6.7 per cent of the production workers, and 6.2 per cent of the value added by manufacture for the industry as a whole were located in this area. The plants represented by these statistics reflect only a portion of the functions carried on by the industry. Total operations involve cleaning, combing, spinning, and weaving; because it is unprofitable to maintain cleaning and combing operations for a small secondary market, the work performed in the South has been confined almost exclusively to spinning and weaving. This means that any cost or other advantages enjoyed by the South must more than offset not only the inertia and costs of establishing a plant in a new environment but also the higher costs of securing raw materials from the scouring and topmaking plants in the Boston area and the expenses of shipping products to the New York City market. Cross-hauling of semi-finished and finished products constitutes the most significant adverse cost differential to operations in the South. This disadvantage amounts to an increase in cost of roughly 1 per cent of the value of the product (p. 148).

Offsetting this cost disadvantage the Southern Piedmont generally offers savings in fuel costs, state and local taxes, and power rates. Apparently a greater source of advantage at the moment is the differential in labor costs. A high rate of population increase and a continuing displacement of agricultural workers furnish a large supply of labor. Absence of an industrial tradition and an aversion to unions make the worker willing to perform scientifically determined work loads at wages prevailing in the cotton textile industry instead of being bound by work-load mores and wage rates of the unionized woolen and worsted industry in New England. The wage rate customs in New England have perpetuated a substantial differential between cotton textile and woolen textile workers. Therefore, the woolen industry in the South has not only a possible geographic wage advantage in the rates paid for similar jobs but also the additional advantage of the customary rate differential between cotton and woolen wages paid in New England (p. 109). Thus, wage rates, smaller fringe benefits, lower payroll taxes, and greater worker flexibility seem to provide the South with a comparative cost advantage in this industry at the moment.

The difficulties of assessing actual cost differentials are imposing; they are so great, in fact, that some of the manufacturers surveyed by Mr. Morris said that they opened Southern plants to learn how their competitors were under-

selling them (p. 170). Since two-thirds of the plants beginning operations between 1939 and 1951 were branches of existing New England establishments (p. 83), a quest for comparative cost information may have been a motive in a number of cases.

From the evidence presented here, at least three avenues of future development for this industry seem possible: (1) a large-scale migration of woolen textiles to the Piedmont; (2) a reduction of labor costs in New England through a modification of the attitudes of workers and their leaders concerning work loads, new machinery, and wage rates; and (3) an amalgamation of the woolen industry with the cotton and synthetic fiber industries to form one "textile" industry with common technological and labor standards. Morris apparently believes that the first of these possibilities will materialize providing no substantial changes occur in the present situation. The recent arbiter's settlement by Walter Gellman of Columbia University providing an 8½ cent wage *cut* for the pattern-setting New Bedford-Fall River textile workers increases the probability of the second proposition. The long-run technical development of new fibers and blends and the apparent feasibility of fabricating some of these on existing or modified cotton-working equipment lends credence to the third possibility.

Morris has amassed a noteworthy amount of statistical and other information concerning the Southern segment of the woolen and worsted manufacturing industry. It is evident throughout that he is intimately conversant with the technical and managerial workings of the industry. It is unfortunate that he could not have reworked this material to clarify the findings and to emphasize the core of the argument. The fault here is, in the main, common with other theses and dissertations, for the system producing them tends to encourage temporizing statements and innocuous conclusions.

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The American Cigarette Industry. By RICHARD B. TENNANT. (New Haven: Yale University Press. 1950. Pp. xxvi, 411. $5.00.)

This is definitely one of the better industry studies. The author has made intelligent use of economic theory and statistical techniques to bring the study into clear and sharp focus. The book is well written and, for the economist, has the virtue of being organized in such a way as to be most easily assimilated.

A very useful one-hundred page history is followed by a crosscut analysis of the cigarette industry since 1911. The salient characteristics are: demand, moderately responsive to real income but quite insensitive to price and advertising expenditures; supply of leaf tobacco, completely inelastic for a crop, moderately elastic from year to year; manufacturing cost, horizontal average variable cost and no appreciable economies of scale. The reasonable probability of most of these characteristics is established by a judicious combination of theoretical reasoning, analysis of historical incidents, and statistical analysis. Least well established are industry demand and costs.

For some unexplained reason, the major statistical evidence on demand consists of the regression of per capita *tobacco* consumption rather than cigarette consumption upon per capita real income and time. From the small residual variability, 3.3 per cent, the author infers low price elasticity. It is dangerous to derive the shape of the demand curve from the fact that changes in consumption are highly correlated with variables likely to produce shifts, particularly when price changes are confined to a narrow range, are probably correlated with income, and are likely to be accompanied by offsetting changes in advertising. However, partly because of other evidence, it does seem plausible that price changes of the customary magnitude have had little effect.

For cigarettes, Tennant merely plots relative per capita consumption (pounds of cigarettes to pounds of tobacco) logarithmically against time. Visual comparisons with various price and advertising series are used to suggest the insensitivity of cigarette consumption to prices and advertising. It is assumed that these variables can have an effect only by increasing consumption relative to other forms of tobacco. This reflects overconfidence in the regression for tobacco consumption. Some of the "explained" as well as the "unexplained" variability may have resulted from the actions of cigarette manufacturers. Furthermore, in the relative consumption curve percentage changes in cigarette consumption which represent changes in total tobacco consumption are understated to an extent which has increased greatly with the rising importance of cigarettes. Since the visual comparisons are far from conclusive, it is unfortunate that the author chose a form of presentation favorable to his results.

In discussing costs Tennant strives overly hard to wring conclusions from unwilling and unreliable data. Horizontal average variable costs are assumed without discussion (p. 354) and in the face of a sharp rise in labor costs for brands whose sales declined between 1941 and 1942. Possible short-run cost variation and the probability that some brands were produced in several factories becloud the author's attempt to determine economies of scale by regressions of unit labor cost and unit overhead upon brand sales. These apparently overlooked difficulties in the data make one reluctant to accept the conclusions.

With respect to price, oligopolistic uncertainty is markedly less than in comparable industries. Each firm recognizes and, what is more important, knows that its rivals also recognize that there can be no appreciable difference in price except temporarily. According to the author, uniformity is brought about by the price leadership of Reynolds, especially for the more difficult upward rises. Since 1931, however, American has led two strategic reductions and two increases, and Liggett attempted an unsuccessful increase in 1946. Any one of the Big Three can announce a higher price and, if not followed reasonably soon, can rescind it without affecting the actual price to distributors. It seems doubtful whether such price leadership as existed has been necessary to maintain cooperation and prevent competition. Any firm can in effect propose a price change and, if not seconded, can withdraw the motion. When it still had the largest sales volume, Reynolds was more likely to receive seconds than any other firm, but American has done as well in recent years. Tennant's conclusion that "the behavior of competitors has been

easily foreseeable" (p. 364) seems overstated. What is foreseeable is the approximate identity of price, not necessarily the precise set of moves and countermoves which will bring it about.

It is unfortunate that more of an effort was not made to analyse advertising strategy and its relationship to price and costs. There are some interesting and unexplained problems.

Despite the antitrust conviction, Tennant constructs a plausible hypothesis of noncollusive behavior. Since profits are undoubtedly above the mythical competitive level, a sharp dilemma is presented for public policy. Fragmentation would have significant effects, the author believes, only if carried far enough to produce Chamberlinian monopolistic competition. By analysing the previous dissolution and the trend in distribution costs, he presents a persuasive case for believing that the increased cost of selling would probably outweigh the reduction in profits. The author considers a limitation on advertising more promising, since it would attack both the principal waste and the major barrier to entry. I doubt, however, that entry would be facilitated, since the large companies could adopt a lower long-run price level. With established brand preferences, probable cost advantages, and a restriction upon the advertising of potential rivals, the position of the large firms might be even less assailable. But prices would be down and advertising would be less, the result apparently produced by the recent prosecution. In fact, the author concludes somewhat reluctantly that the best public policy is continuation of the threat of prosecution.

Although the study is distinguished by a competent use of theory, there are two exceptions. At times theory appears to become a strait jacket, and conclusions are stated in unnecessarily extreme form. Also, in using his results as a defense of marginalism, the author slips into operationally meaningless propositions. Marginal analysis is regarded as valid by definition whenever any problem of maximization arises, and an interest in profits is confused with an interest in their maximization (p. 364).

More recently W. H. Nicholls has analysed the same industry, but he has concentrated heavily on price policies and has not attempted a broad industry study.[1] The characteristics of demand which Tennant made a very careful effort to determine, Nicholls introduces without discussion. The authors disagree on the sensitivity of total cigarette demand to income and advertising. Nicholls presents much more of the original data on price decisions and the issues of the trial. Although Nicholls gives a more complete and better balanced analysis of price policies, the authors seem to be in substantial agreement. Both advance noncollusive explanations of behavior, but Nicholls discusses more cogently the dilemma for public policy. Nicholls is somewhat more favorable to dissolution, but he does not consider as fully as Tennant does the probable rise in costs. He does, however, correct for the defects in Tennant's limitation upon advertising by proposing a tax on advertising, the base being the size of firm. By piecing together these two excellent studies,

[1] William H. Nicholls, *Price Policies in the Cigarette Industry* (Nashville, 1951). Reviewed in this journal, June 1952, pp. 461-63.

economists can get a deeper insight into the cigarette industry than into almost any other.

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Men, Meat and Miracles. By BERTRAM B. FOWLER. (New York: Julian Messner, Inc. 1952. Pp. 245. $3.00.)

This book is an excellent popular survey of the modern American livestock and meat industry by a man whose newspaper training, journalistic experience, and special studies and books on various aspects of the cooperative movement in America—agricultural and otherwise—have given him a good background of knowledge and understanding. In less than 250 pages of eighteen pleasantly written descriptive and interpretative chapters, the author has done several useful things for the student of our economic and business history.

First, he has drawn some realistic pen pictures of the men who developed the modern meat packing industry of national and international scope. Morris, Armour, Swift—the great innovators—are here brought to life and interpreted sympathetically. So, too, are some of the characters who made the Chicago stockyards and other livestock markets. The relation of the industry to the agricultural growth of the West is made clear. The significance of the industrial revolution of the generation after the Civil War is emphasized, using the meat industry for illustration. Indeed, all through the volume the author drives home the debt we owe to the free enterprise system, its traditions and ethics, by examples from the customs and practices of this industry where so much has been carried on by word of mouth—the honor system—rather than by written contract.

In several chapters the author is at pains to clear up some misconceptions about the meat industry. He shows how it was the very fact of the expanding national meat industry that brought inevitably the evolution of the present system of federal meat inspection. The usually accepted story is that it was forced upon the industry by the mere publication of such lurid and unjust books as Upton Sinclair's *The Jungle,* a book which has been given entirely too much credit by serious historians. Likewise, he devotes an entire chapter to the myth of the "Beef Trust." He indicates how understandable was the rise of the myth because of the fact that the distribution of meat and meat products dealt with such an overwhelming majority of the people through local meat markets. Therefore, the consumers were out of direct touch with the packers themselves. The packers were caught between the livestock producer on the one hand and the consuming public on the other.

Finally, with his prior interest in cooperation, it is natural and logical that the author should devote the latter half of his volume to the development of cooperation both within the meat industry itself, and with livestock producers. Intra-industry cooperation made the industry more efficient in production, in distribution and in the carrying on of industry-wide research with the University of Chicago. The Institute of American Meat Packers, since 1940 known as the American Meat Institute, made the problems of the industry

more widely understood by the public. Also, there has been effective cooperation brought about between the industry and the great national livestock producing associations. All this is told through what is essentially a series of biographical chapters about Thomas E. Wilson, who has been the recognized leader of the meat industry during the past generation. It was his personality, prestige and persuasiveness that did much to establish the meat industry's trade association, and the National Livestock and Meat Board, and rendered so successful and beneficial to the nation the 4-H Club work among millions of young farm boys and girls during the last quarter century.

Perhaps the author has given credit to too few individuals in this national industry; but to point up some few fundamentals, and to drive home some basic truths about one of the greatest modern industries of this country, his method is effective. While there may be a tendency to leave an impression of a little more altruism than was actually the case, yet this book helps to redress the balance after a series of volumes by writers who have been too critical, without any practical experience of business to enable them to see industrial problems as they must be seen by those who have to solve them. We need both points of view and both kinds of books. The present volume is a valuable statement of the laissez-faire view. All it lacks is an index, and some additional documentation.

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Land Economics; Agricultural Economics; Economic Geography

Agriculture and Economic Progress. By E. M. OJALA. (London and New York: Oxford University Press. 1952. Pp. 217. $5.00.)

Since the days of Malthus, economists have realized the importance of efficient food production and marketing. But they have given greater attention to these problems in the past decade than ever before. The Food and Agriculture Organization has presented evidence that economic progress is being retarded in many parts of the world by inadequate diets. Mr. Ojala's book summarizes some of the evidence on this period, and proposes policies aimed at increasing the world's supply of food, and distributing it in such a way as to overcome the worst dietary deficiencies.

This is a very large problem. Ojala states, for example, "It has been estimated that if production goals were based on full physiological requirements, the world production of the more expensive foods of special value for health would need to be doubled." He apparently refers here to animal products and to fruits and vegetables. Although smaller increases would satisfy the needs for food grains and root crops, it is clear that world agriculture would have to be expanded greatly to meet all food needs.

In his first chapter, Ojala reviews the findings of Colin Clark that economic progress is associated with a decline in the proportion of the population engaged in agriculture. The second chapter, "Concepts of Economic Welfare,"

includes a discussion of agriculture's contribution to economic welfare. It is pointed out here that the retail price of food includes payments for processing, transporting, packaging, delivering, and so on. Ojala contends that these payments should be eliminated, and that "to measure the contribution of agriculture alone to the community's economic welfare, the procedure must involve weighting agricultural output by the value which the community places upon that output as it leaves the farm."

Chapters 3, 4, and 5 review the statistics of agriculture and of other segments of the economies of the U.S.A., Sweden, and the United Kingdom. This analysis forms the basis for conclusions drawn in the remainder of the book, concerning the relation of economic progress to industrial patterns, to consumption patterns, to agricultural population and incomes, and to price levels.

The final chapter deals with policy. It is pointed out that "there is a fundamental problem of agricultural incomes . . . agricultural producers individually have, on the average, been constantly and badly underpaid for their services," due to many factors, including the low price-elasticity and the low income-elasticity for food. He points out that some kinds of price supports may be needed to encourage adequate food production, but indicates the need for flexibility in the agricultural labor force in order that submarginal farm workers may find more productive work in cities. He concludes that "the primary concern of world agricultural policy should be to increase the *efficiency of production* everywhere, particularly in the growing and supply of foodstuffs."

FREDERICK V. WAUGH

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The Canadian Grain Trade—1931-1951. By D. A. MACGIBBON. (Toronto: University of Toronto Press. 1952. Pp. ix, 227. $4.50.)

This is the second book that Professor MacGibbon has written on the subject of "The Canadian Grain Trade." The first appeared in 1932 and brought his review and analysis of the market organizations and development of exports for Canadian grain through World War I and the decade of the 1920's. In that period Canada came of age as a world exporter of wheat, and with the active market demand for her increasing production a feeling of considerable assurance about the future had begun to develop.

The present volume, covering the twenty-year period 1931-51, not only brings the earlier volume up to date but it provides an unusual account of the step-by-step control that the Canadian government has assumed in regard to the grain trade in that country. Beginning with the impact of the world economic depression of the early 1930's, especially upon the three prairie provinces of Canada that had concentrated upon wheat production, it chronicles the developments that led to the creation of the Canadian Wheat Board that has become one of the foremost world grain-marketing monopolies of the present time. Starting with continued declines in world and Canadian wheat prices in 1929 and 1930 that adversely affected the credit position of the Pool organizations and in turn the banks that had been providing the financing for the crops, a joint appeal was made to the federal government

for aid. The assistance was granted on the understanding that a central selling agency be established and a government-appointed manager be placed in charge. The crisis lasted longer than expected; then World War II started and the Wheat Board further extended its rôle of operation through the war and postwar food crisis period. Today the Board seems to be rather generally regarded as a permanent part of the Canadian grain trade.

This point deserves special mention in the opinion of the reviewer because it shows how what was expected to be a temporary intervention on the part of the government led to the creation of a state monopoly marketing organization of Canada's principal export industry. MacGibbon's book, in fact, may be regarded as a case study for those interested in government controls and state trading. As such, it should have a wider audience than those concerned with developments in Canada or in commodity activities relating to grain and especially wheat.

In 1929 MacGibbon, who had been professor of political economy at the University of Alberta for many years, was appointed a member of the Board of Grain Commissioners for Canada—the government agency responsible for administering grain standards and regulatory activities. He served as a Commissioner for twenty years when he again returned to academic life. During these two decades, however, which closely correspond to the period covered by his present volume, he was in a position to observe Canadian grain trade developments closely. This fact, no doubt, accounts for much of the detail included in the book which makes it rather slow and difficult reading though at the same time a very useful reference source on the subject for this period. The Board of Grain Commissioners, it should be noted, is a separate and distinct agency from the Canadian Wheat Board, and his extensive references to Wheat Board operations are as an observer, not an active participant.

Among the points given special emphasis in the present book are the International Wheat Agreements of 1933 and 1949, the British wheat agreement (a bilateral contract), and the various organizational segments of the grain trade. These include, in particular, the Canadian Wheat Board, its establishment in 1935, its operations during the war period and postwar development (little detail after 1949-50); the three Provincial Pool organizations and their growth, the United Grain Growers Ltd. and the independent companies, and the Winnipeg Grain Exchange. With these grain trade organizations so widely different in character, yet many of them highly competitive in their efforts to participate in marketing Canadian grain, it may be expected that there will be some differences of opinion about the author's treatment of these sections, particularly among the various groups represented. The relative effectiveness of the respective types of marketing operations and organizations in Canada continues to be a very controversial subject. If another Royal Commission (the last commission study was made in 1936-38) were to investigate the problem of Canadian grain marketing today, it would be interesting to see how the various issues and organizational forces would be compromised. It is notably true, however, that producer groups in Canada as in the United States appear to be almost unanimous in the desire to have some

form of support price that will prevent free market prices from declining beyond certain limits.

While most of the book is devoted to a factual commentary, the author does include some personal interpretations and conclusions. Among these the following selected brief statements appear timely and of general significance and also seem to reflect in summary form much of MacGibbon's point of view about Canada's grain trade.

> Canada is so deeply committed to an export trade in wheat that any developments in this field of international trade are of the highest importance to her. . . . But it must be recognized that neither the outcome of the British wheat agreement nor the prices currently being obtained from sales made under the terms of the International Wheat Agreement provide evidence that long-term contracts of this nature are advantageous to the producer.
>
> The maintenance of the Canadian wheat export trade on a sound basis requires wheat production in areas capable of growing wheat of high quality at relatively low cost, the handling of stocks in the least costly method possible without deterioration of quality, and a sales policy of offering wheat at prices "as low as is consistent with actual cost of production." Regard for these factors in the past largely accounts for the important position Canada now occupies in international wheat trading, and it lies within Canada's own power to continue to be guided by this fact. Canada, however, is only part of an international trading community in which the wheat trade is an important item. International trade will languish if nationalistic restrictive policies impair it. For the Canadian West the most propitious circumstances for the continuance of its export trade in cereals are those that make for the freest possible international exchange of goods and services.

When the reviewer finished reading the book and started to reflect upon the subject of the Canadian grain trade and particularly the phases with which he has had personal contact over many years, there were a number of points that seemed to call for special comment. He has selected three that may be of more general interest. The first relates to statistical material. The reviewer had hoped that the book would have a comprehensive set of statistical tables and possibly charts covering various aspects of the Canadian grain trade during the twenty-year period. Only four short tables, however, are included and these are confined largely to a limited period and subject matter. Export data about Canadian grain or Canada's place as a world exporter is particularly inadequate for those interested in this aspect of the grain trade in that country. On the other hand, almost every paragraph is studded with statistical data or comparisons. Prose statistics, while of some usefulness, present real problems in usability for reference purposes or effective analysis, and especially in readability.

The second point concerns the Canadian Wheat Board. Its operations which cover much of the period of the book are discussed in a very impersonal manner. No doubt the author had his reasons for this type of treatment, but in the opinion of the reviewer the Board and the personality of its Chief Commissioner, Mr. George McIvor, have been so closely interwoven during most

of the Board's official existence that it is hard to separate them. The history of the Board and its operations might have been vastly different from what Professor MacGibbon has recorded had someone else been its Chief Commissioner, and particularly if political influence had been permitted to affect its operations as so often happens in agencies of this type. There are few government organizations anywhere, especially of the size and volume of business handled, that can point to a longer untarnished record than the Canadian Wheat Board. This factor should not be overlooked or underemphasized in any evaluation of the Board, particularly by other governments that may be interested in Canada's experience in this type of grain trade organization.

Thirdly, this period, and notably the years following World War II, have emphasized some of the weaknesses in the Canadian grain export situation, particularly in meeting world emergency needs. Notwithstanding the major export rôle played by Canada during much of the inter-war period, it was the U. S. ability to produce and export larger quantities of grain that saved the world during the food crisis period. Among the weaknesses that have become apparent are the limits on exports due to domestic transportation facilities, and the vulnerability from weather conditions to the concentrated production in western Canada. A policy of maintaining reserve stocks could do much to minimize the effects of annual crop variations, but Canada has usually proven to be an aggressive seller regardless of the status of stocks.

The story of the Canadian grain trade is a very interesting one and it is still being written. MacGibbon has brought his account of the story up to date, and it should prove helpful to those interested not only in a better understanding of past developments but also in having background for some of the important chapters that are likely to be written in the period ahead.

GORDON P. BOALS

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World Economic Geography—An Introduction to Geonomics. By GEORGE T. RENNER, LOYAL DURAND, JR., C. LANGDON WHITE, and WELDON B. GIBSON. (New York: Thomas Y. Crowell. 1951. Pp. x, 758. $6.00.)

There is surely no lack of agreement that the beginning student of economics is invariably woefully innocent of any significant body of factual information relating to economic matters beyond his personal and very limited immediate experience. That he should know much more than he does about the economic resources of his own nation, and of the world, and of the physical characteristics of specialization in production, trade, and transportation, seems obviously desirable. Precisely what the student should know, for what purposes, and how he should acquire this information are matters on which very great differences of opinion and practice exist. One solution, followed particularly in undergraduate schools of commerce, is to require a course in economic geography, with the expectation that the student, in the process of acquiring a fund of factual information, will develop also some appreciation of economic life as consisting, as the authors of this volume write, of "superimposed and intimately interrelated physical, economic, and cultural patterns."

If our authors are aware of "interrelated patterns," they state also that "the great problems of the world are basically matters of economic geography and

cannot be properly understood in any other terms." The expectation is aroused that the subject-matter will be broadly and inclusively defined with appropriate analysis of economic and cultural patterns in the light of physical resources. Were such the case, this might justify the claim that this is a "really new type of college textbook." In fact, the performance is conventional and the book is more adequately described as one which "develops the more common principles and generalizations of economic geography in the light of an orderly and relatively full presentation of the great industries of mankind."

The volume is indeed a relatively full presentation of the world's more important resources. After a brief and elementary discussion of the relationship of men and resources under the title of Geographical Premises, it plunges, in Part 2, into the discussion of well over a hundred basic commodities and commodity classes, occupying close to five hundred double-columned pages. It begins with those agricultural products characteristic of the rainy tropics and continues with chapters on the products of each of the great climatic regions. Individual chapters are devoted to forests and to fisheries, and other oceanic products. Part 3 covers the basic minerals and then moves on to deal with the geographic distribution and characteristics of the major manufacturing industries. Part 4 covers transportation and commerce, opening with a chapter on the division of labor, followed by one on the principles governing the exchange of commodities, continues with four chapters on the major forms of transportation, and concludes with a very brief discussion of the forms of social regulation of trade.

In the discussion of resources and commodities, emphasis is on the physical factors which relate to supply and utilization. References to costs, values, and quantities are largely summarized in charts and maps in very general terms; the volume will do little to develop the student's ability to think quantitatively. Relevant historical developments are given unusual extensive emphasis, but the institutional organization of the societies which use the resources and produce the goods discussed are treated very lightly or ignored.

Those who wish to introduce beginning students to an extensive body of factual information will find this volume very useful. Even for that purpose, however, the book would seem to include too few indications of the reasons why facts are presented, too few clues to aid the student in developing his judgment as what is more or less important. The student who masters the material presented will possess much information pertinent to such problems as those of present-day Europe or of the underdeveloped countries. The analytical tools necessary to the utilization of such information will have to be supplied from some other source.

CLARENCE H. DANHOF

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Labor

The Danish System of Labor Relations: A Study in Industrial Peace. By WALTER GALENSON. (Cambridge: Harvard University Press. 1952. Pp. xii, 321. $4.50.)

Denmark has had comparative industrial peace and a highly centralized

collective bargaining system for fifty years. The record of this achievement and the problems that have developed within recent years as Denmark's terms of trade have become less favorable are thoroughly explored in this second study[1] of industrial relations in a Scandinavian country by Walter Galenson, who served as labor attaché at the American embassies in Oslo and Copenhagen in 1945 and 1946.

The Danes achieved stability in industrial relations much earlier than their Scandinavian neighbors, although the pattern was similar. The Federation of Labor, now representing nearly 90 per cent of the workers in manufacturing, construction and transportation and communication (and smaller percentages in other industries), was formed in 1898—the same year in which the Danish Employers' Association was established. The latter is even more centralized than the Federation of Labor, which has been plagued by internal differences between the skilled craft unions and a Laborer's Union of unskilled and semi-skilled factory workers, totalling 38 per cent of the Federation's membership. A test of strength between the two central organizations came during "the great lockout of 1899," when the employers, "aroused by the increasing trade union aggressiveness occasioned by favorable employment conditions, decided to wage a preventive war before their opponents grew too strong" (p. 98). The objective was not to crush unionism, however, and after three months the "September Agreement" was signed, laying the groundwork for the subsequent pattern of peaceful Danish labor relations. Similar agreements did not come until 1935 in Norway and 1938 in Sweden.

Collective agreements in Denmark are predominantly nation-wide, and they generally have a common expiration date (March 1). Significantly, the initiative for these developments came from the organized employers, rather than from the unions, as is generally the case in the United States. The difference is explained by the smaller relative size of Danish firms confronting powerful national unions. Individual employers have delegated full responsibility for negotiations to full-time professional staffs in the central association, although recently there have been proposals to strengthen local bargaining on matters of local interest. Galenson believes, however, that increased independent bargaining is unlikely because of the Employers' Association's probable unwillingness to abandon the "sympathetic lockout" which prevents strong unions from playing one employer off against another.

What have been the effects of this centralization in collective bargaining? Industrial peace is the outstanding one, and in this the Danish record is better than either the Norwegian or the Swedish. But peace has not come without increasing government intervention, despite the elaborate collective bargaining machinery. Governmental mediation is highly developed in Denmark, dating from 1910, and the mediator takes an active rôle in proposing a settlement. "The national wage movements of the last three decades have almost without exception reached at least the mediation phase of collective bargaining" (p. 127). Since 1932, mediation has failed in ten cases which

[1] The first was *Labor in Norway* (Cambridge, Harvard University Press, 1949).

were settled only after further government intervention involving *ad hoc* compulsory arbitration or enactment of the mediation proposal into law following rejection by (with one exception) the employers. Galenson notes: "The growth of centralization in collective bargaining certainly renders it less likely that the government will refrain from intervention" (p. 137). Sweden's experience, however, is still an exception to this generalization. Both countries, it should be noted, have a Labor Court to adjudicate disputes arising under collective agreements.

The economic effects of centralized collective bargaining are less apparent. The greatest gains in real wages came after both world wars, when there was wage-price inflation and full employment. "Whether as cause or effect, both these periods were marked by a considerable radicalization of the trade union movement and aggressive union wage policy" (p. 162). Union strength was evidently a factor in resisting wage reductions, for in the period 1930-37 the unions maintained money wages unchanged in the face of an adverse shift of the terms of trade between Denmark and the rest of the world, resulting from a relative decline in the prices of agricultural products, which Denmark exports.

The shift in the terms of trade accounts principally for the failure of Danish real wages to keep pace with those in Norway and Sweden, although there has also been a lag in Danish labor productivity. The reasons for this are more complex, but the very factor which helps make Danish labor relations orderly also apparently tends to restrict industrial efficiency and expansion. Galenson calls this "the spirit of corporatism" (p. 266). Businessmen are addicted to price and market agreements in the sheltered domestic market, unlike their Norwegian and Swedish counterparts, or the Danish farmers, all of whom must complete in world markets. "For their part, the trade unions have abetted restriction and contributed to the failure of industrial productivity to rise more sharply by insisting upon the maintenance of an archaic labor market structure" (p. 267). Recently, however, the Danish unions have taken productivity more seriously, through establishing labor-management production committees, participating in a commission to improve utilization of manpower in the face of closed jurisdictions of skilled crafts, and general discussions of ways to increase industrial productivity.

Another economic effect of centralized bargaining in Denmark is a stable wage structure. Powerful unions have apparently not been able to "distort" the structure, as is sometimes charged in this country. The metal-trades agreement sets a pattern which is generally followed in the other centralized negotiations, and prevailing wage relationships are largely maintained. The principal exception is the narrowing of the skilled-unskilled differential, which was realized under central bargaining. Galenson concludes that "the absence of centralized bargaining would have resulted in greater scrambling of craft wage differentials and in less equalitarianism" (p. 186).

The Danish labor movement, unlike the Norwegian or Swedish, has been forced to rely principally on collective bargaining for the achievement of its economic goals. The Farmers' Party is relatively stronger in Denmark, and

although the Socialist Party, with which the unions are allied, is larger, it is still a minority party. Thus, taxation, price controls, subsidies, and government regulation of investment cannot be utilized as they are by the Norwegian and Swedish labor parties which enjoy stronger positions of control. For the same reason, the Danish unions have not had to face the impact of these programs on their collective bargaining rôle when a labor party is in power.

The Danish labor relations experience is instructive on the advantages and costs of centralized collective bargaining. Professor Galenson has again helped American students of labor economics and industrial relations to gain new insights into our own collective bargaining experience by this type of comparative study of a labor movement. As Professor Slichter rightly points out in a Foreword to the book, "Careful case studies are needed to produce a reliable basis for generalizations about why men organize and why different trade-union movements develop different objectives, policies and methods. The accumulation of the necessary case studies is bound to take years."

This reviewer would have liked more analysis of the Danish entrepreneurial system, its outlook and policies, and its relation to the kind of labor movement which evolved. There is little mention, for example, of the ways in which Danish employers have handled labor relations at the plant level, their attitudes toward the shop steward system that has developed, or their behavior under the protection given by the September Agreement to management prerogatives. But with the rich offering already provided, these omissions are not serious. This study, and the earlier one on Norway, set a high standard indeed for other students of foreign labor movements to achieve.

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Pressures on Wage Decisions. By GEORGE P. SHULTZ. (New York: John Wiley and Sons, in conjunction with the Technology Press, Massachusetts Institute of Technology. 1951. Pp. 139 + vi. $3.)

Two major influences on wage decisions have been emphasized in recent literature on collective bargaining: economic pressures exerted by "impersonal market forces," particularly in the product market; and political pressures emerging from bargaining institutions and processes. Some observers have assumed that these themes are at odds with each other and require a choice between two competing "theories of wages." A more sensible view is that institutional and market influences interact through the medium of collective bargaining—offsetting, reinforcing, and modifying each other, and producing results which cannot be explained either by pure politics or pure economics. However, there has been a relative dearth of empirical studies testing this proposition and examining specific modes of interaction.

Mr. Shultz' monograph is a carefully documented study of wage determination in the Brockton, Massachusetts, shoe manufacturing district. His purpose

is to show "how these two views, market forces vs. human decisions, are synthesized when the total scope of collective bargaining relationships is examined."

In early chapters Shultz describes the characteristics of the Brockton shoe industry, the manufacturers' group and the Brotherhood of Shoe and Allied Craftsmen. The industry is highly competitive, and not very remunerative to either owners or workers; over the years there has been a movement into nonunion areas, and a distinct trend toward lower price lines. Fixed costs being small, labor cost is the focus of interfirm competition. Piece rates are prominent in the wage structure. The employers have strong goals in common, but the Brockton Shoe Manufacturers Association is limited in cohesiveness because its members concentrate on different grades of shoes and vary in their ability and inclination to take a strike. The Brotherhood, an independent union, consists of craft locals with considerable autonomy. There is pressure on officers from an active and impatient membership, and rivalry with a CIO organization in the shoe industry.

Noting that earlier writings on wage policy have dealt for the most part with general movements, Shultz identifies three types of wage decisions in the Brockton shoe district. First are general wage adjustments, which take the form of across-the-board percentage increases or decreases. These are strongly affected by pressure from dissatisfied members and comparison with rival union settlements. Second is the "grade system," under which labor costs are differentiated in accordance with selling prices. The system has been administered in an opportunistic fashion, grades being influenced by the financial position of the various producers. With the trend toward lower price lines, labor costs have not risen to the extent indicated by apparent general increases. Piece-rate adjustments make up the third type of wage decision. Piece rates are tightened or loosened in response to economic conditions, and like the grade system, "have provided a way in which the district has adjusted to circumstances not fully recognized in explicit across-the-board wage movements." In other words, in this piece-rate industry characterized by relatively high labor costs, low profits, and nonunion competition, the "employment effect" has an important impact on wages; but the impact is centered on the administration of the grade system and piece rates, rather than the negotiation of general adjustments.

Mr. Shultz concludes that neither producers nor workers are organized for an effective attack upon the economic problems of the district. "Thus," he notes, "the district's most important wage decision, how to organize within the firm for effective use of labor resources, is not made on a conscious level at all but simply results from many uncoordinated actions which, taken together, tend to aggravate rather than help solve the problem."

Pressures on Wage Decisions is not merely a superior case study of an interesting situation but an important contribution to theoretical understanding of wage determination under collective bargaining. We need more studies of this kind.

ARTHUR M. ROSS

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TITLES OF NEW BOOKS

Economic Theory; General Economics

HAJELA, P. D. *Keynes' general theory—trade cycle and foreign exchange.* (Allahabad: Pothishala Ltd. 1952. Pp. ii, 232. Rs.5/-.)

The three parts of this book of essays are almost independent of one another. The first part is an exposition of Keynes' *General Theory,* a commentary upon it and an appraisal of it. The second part is on the theory of foreign exchange—the purchasing power parity theories, balance of payments theory, and the theory of foreign exchange under a gold standard. The third part is on business cycle theory—the purely monetary, the monetary over investment, and Keynes' theory—and remedies for the cycle. There is a final chapter on the definition of money.

KEYES, S., editor. *Economics: trends and issues—a book of readings.* (New York: Russell F. Moore Co. 1952. Pp. ix, 508. $2.90.)

LEONTIEF, W. *Studies in the structure of the American economy—theoretical and empirical exploration in input-output analysis.* (New York: Oxford Univ. Press. 1953. Pp. x, 560. $11.)

MILLS, F. C. *Productivity and economic progress.* Occas. paper 38. (New York: Nat. Bureau of Econ. Research. 1952. Pp. 36. 75¢.)

ROBBINS, L. *The theory of economic policy in English classical political economy.* (New York: St. Martin's Press. 1952. Pp. xii, 217. $3.)

ROBERTSON, D. H. *Utility and all that and other essays.* (New York: Macmillan. 1952. Pp. 207. $3.50.)

SRAFFA, P., editor, with the collaboration of H. M. Dobb. *The works and correspondence of David Ricardo.* Vol. VI, *Letters 1810-1815.* Vol. VII, *Letters 1816-1818.* Vol. VIII, *Letters 1819-1821.* Vol. IX, *Letters 1821-1823.* (New York: Cambridge Univ. Press, for the Royal Econ. Society. 1952. Pp. xii, 353; ix, 387; ix, 403; ix, 401. Each vol., $4.75.)

VON MISES, L. *Planning for freedom.* A collection of essays and lectures. (South Holland, Ill.: Libertarian Press. 1952. Pp. vi, 174. $1.50.)

VON STACKELBERG, H. *The theory of the market economy.* Translated from the German by A. T. Peacock. (New York: Oxford Univ. Press. 1952. Pp. xxiii, 328. $4.50.)

The German edition of 1948 was reviewed in the June 1949 number of this *Review.*

ZIMMERMAN, L. J. *The propensity to monopolize.* Contributions to economic analysis, vol. 2. (Amsterdam: North-Holland Pub. Co. 1952. Pp. v, 100. $2.)

Economic History; National Economies

AGUILERA, F., editor. *Handbook of Latin American studies: 1949. no. 15.* Prepared by The Hispanic Foundation of The Library of Congress. (Gainesville: Univ. of Florida Press. 1952. Pp. xii, 289. $7.)

A selective guide to material published in 1949 with a section devoted to economics.

ASHWORTH, W. *A short history of the international economy, 1850-1950.* (New York: Longmans, Green. 1952. Pp. 256. $3.25.)

CIPOLLA, C. M. *Mouvements monétaires dans l'état de Milan (1580-1700).* Ecole Pratique des Hautes Etudes, Centre de Recherches Historiques. (Paris: Lib. Armand Colin. 1952. Pp. 92.)

CLOUGH, S. B. and COLE, C. W. *Economic history of Europe.* 3d ed. (Boston: D. C. Heath and Co. 1952. Pp. xx, 917. $5.75.)

In this new edition changes have been made in the chapters dealing with the period

between the two World Wars; the chapter on World War II has been rewritten, and a new chapter on developments since 1945 has been added.

COLES, F. A. *An internal financial plan for the implementation of economic development in Thailand.* (Washington: Special Technical and Economic Mission to Thailand. 1952. Pp. 42.)

COLM, G., assisted by M. YOUNG. *The American economy in 1960—economic progress in a world of tension.* Nat. Planning Assoc. staff rept. pamph. no. 81. (Washington: Nat. Planning Assoc. 1952. Pp. 165.)

FAY, C. R. *Round about industrial Britain, 1830-1860.* (Toronto: Univ. of Toronto Press. 1952. Pp. ix, 227. $5.50.)

A series of lectures in which Professor Fay examined the social, educational, economic and financial conditions in the main industrial sections of Britain in the period indicated.

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HOSELITZ, B. F., editor. *The progress of underdeveloped areas.* A collection of papers delivered at the Twenty-seventh Harris Institute on International Relations, June, 1951. (Chicago: Univ. of Chicago Press. 1952. Pp. x, 297. $4.75.)

LAMONT, C. *Soviet civilization.* (New York: Philosophical Lib. 1952. Pp. xviii, 433. $5.)

The picture is a broad one, including political, ethnic, religious and economic aspects of Soviet civilization. There is one long chapter on "Soviet Economic and Cultural Progress."

LUBELL, H. *The French investment program; a defense of the Monnet plan.* (Geneva: Econ. Commission for Europe of the U.N. 1951. Pp. 226.)

METCALF, J. E. *The agricultural economy of Indonesia.* Dept. of Agric. monog. no. 15. (Washington: Supt. Docs. 1952. Pp. 99.)

MIRSKEY, J. and NEVINS, A. *The world of Eli Whitney.* (New York: Macmillan. 1952. Pp. xvi, 346. $5.75.)

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SETON-WATSON, H. *The decline of imperial Russia.* (New York: Frederick A. Praeger. 1952. Pp. xvi, 406. $7.50.)

The period is the last sixty years of Imperial Russia. Considerable attention is given to economic developments.

SOVANI, N. V. *Social survey of Kolhapur City.* Vol. 2, *Industry, trade & labor.* Vol. 3, *Family living & social life.* (Poona: Gokhale Institute of Econ. & Politics. 1951 and 1952. Pp. x, 346; xiv, 330. Rs. 12, each.)

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WEST, R. C. *Colonial placer mining in Colombia.* (Baton Rouge: Louisiana State Univ. Press. 1952. Pp. x, 157. $3.)

WILGUS, A. C. *The Caribbean: peoples, problems and prospects.* School of Inter-American Stud. ser. 1, vol. II. (Gainesville: Univ. of Florida Press. 1952. Pp. xviii, 240. $4.50.)

A collection of papers delivered at the second annual conference on the Caribbean held at the University of Florida, December 6-8, 1951. Health, land utilization, trade, culture and diplomacy are the subjects treated.

Economic development in the United Kingdom. (Washington: Mutual Security Agency, Mission to the United Kingdom. 1951. Pp. 139.)

Economic survey of Asia and the Far East 1951. Prepared by the Secretariat of the Econ. Commission for Asia and the Far East, U.N. Dept. of Econ. Affairs pub. no. 1952. II. F. 2. (New York: Columbia Univ. Press. 1952. Pp. xxix, 400. $2.50.)

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Mission to Iraq. The economic development of Iraq. Report of a Mission organized by the Internat. Bank for Reconstruction and Development at request of Govt. of Iraq. (Baltimore: Johns Hopkins Press. 1952. Pp. 463.)

Mission to Nicaragua. The economic development of Nicaragua. A report of a Mission organized by the Internat. Bank for Reconstruction and Development at request of the Govt. of Nicaragua. (Baltimore: Johns Hopkins Press. 1952. Pp. 108.)

Répertoire officiel de la production Luxembourgeoise. 2nd ed. (Luxembourg: Ministère des Affaires Econ. 1953. Pp. 204.)

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NOTES

John H. Williams, of Harvard University, has been appointed chairman of the American Economic Association nominating committee for the current year. He would appreciate having suggestions for officers for next year at as early a date as possible. Such suggestions may be addressed to him at the Federal Reserve Bank of New York, 33 Liberty Street, New York, N.Y.

Retirements

The following members of the profession have been reported as retiring from teaching at the end of the current academic year:

Julius B. Bearnson, professor of economics, department of economics, College of Business, University of Utah.

Orval Bennett, professor of business and government at Washington University, St. Louis.

Pembroke H. Brown, professor of economics, University of Illinois.

Donald English, professor of accounting, Cornell University.

S. S. Huebner, professor of insurance, Wharton School, University of Pennsylvania.

Marion K. McKay, head of the department of economics, School of Business Administration, University of Pittsburgh.

Harry J. Ostlund, associate professor of accounting, School of Business Administration, University of Minnesota.

E. C. Stone, professor in the School of Business Administration, University of Pittsburgh.

Nina L. Youngs, instructor in accounting, School of Business Administration, University of Minnesota.

Visual Materials in Economics

A Visual Economics Laboratory was established at Columbia University in November 1951 and was financed for a year by a grant from the Alfred P. Sloan Foundation. Trustees of the Foundation have made an additional grant to cover the budget of the Laboratory until November 1953. Dr. Arthur Dahlberg is director of the Laboratory. The visual materials that are being prepared are in process of testing in courses in economics in Columbia College. Upon completion of the tests the entire output of the Laboratory will be made available to other colleges and universities. The material will probably be ready for distribution at the end of the current academic year.

Social Science Research Council Announcements

The Social Science Research Council announces a new program of stipends and fellowships designed to identify and assist able students at an early stage of their education. A grant from the Ford Foundation enables the Council to offer, during a period of three or four years beginning in 1953, Undergraduate Research Stipends which may be followed by First Year Graduate Study Fellowships. *Undergraduate Research Stipends* will be awarded to college juniors who will devote eight weeks or more during the summer between their junior and senior years to research under the guidance of designated faculty supervisors. Awards of *First Year Graduate Study Fellowships* will be made in the latter part of the senior year to about one-half of the undergraduate stipend holders who have shown superior promise of making successful careers in the scientific study of human behavior.

The Social Science Research Council also announces a Summer Institute in Mathematics for Social Scientists to be held at Dartmouth College, Hanover, New Hampshire, from June 22 to August 14, 1953. The Institute is open to faculty members and predoctoral and postdoctoral students who wish to improve their mathematical training. Holders of the bachelor's degree who are about to enter graduate schools may also be admitted. Enrollment will be limited to about thirty.

Deaths

Franz K. Balling died August 6, 1952.

Truman C. Bigham, chairman of graduate work and professor of economics, University of Florida, died December 29, 1952 in Dallas, Texas.

Frank Buchanan, U.S. Congressman, died April 27, 1951.

Clive Day, of Yale University, died July 27, 1951.

Elisha M. Friedman died March 25, 1951.

Ernest H. Hahne, of Miami University, Oxford, Ohio, died November 25, 1952.

Donald J. Hay, of the University of Illinois, died November 1, 1952.

Donald M. Marvin died April 1, 1952.

Arthur E. Murdoch died July 17, 1952.

Edwin F. Wendt died September 30, 1952.

William M. Whitten.

Appointments and Resignations

Stephen G. Allen, formerly of Stanford University, has joined the faculty of the University of Minnesota as assistant professor of statistics.

Clay J. Anderson has been granted a year's leave of absence from the Federal Reserve Bank of Philadelphia to serve as advisor to the Union Bank of Burma, Rangoon, Burma.

John W. Anderson, of Indiana University, has been appointed assistant professor of accounting in the College of Business Administration of the University of Georgia.

Werner Baer has joined the staff of Bache & Company, members of the New York Stock Exchange, as security analyst. He continues to teach economics in the School of General Studies at Hunter College.

C. Kenneth Beach, of the School of Industrial and Labor Relations, Cornell University, has been granted a leave of absence to serve as coordinator of training activities for Arabian American Oil Company.

Richard F. Behrendt is chief of the United Nations Technical Assistance Mission to Paraguay and advisor to Paraguay's National Planning Commission for Economic Development. He will occupy a new chair for sociology and international economics at the University of Bern, Switzerland, in the fall of 1953.

Russell Bowers, formerly professor of accounting at the University of Georgia, has been appointed lecturer in business administration in the School of Business Administration, Emory University.

John W. Bowyer, Jr., has been appointed assistant professor of finance in the School of Business and Public Administration of Washington University, St. Louis.

Edward C. Budd has been promoted from instructor to assistant professor of economics at Yale University.

David W. Bussell has resumed teaching at the Ohio State University after having been in active service in the U.S. Navy for one and one-half years.

J. Carl Cabe has been appointed assistant professor of economics at the University of Kansas.

Arthur E. Carlson has been appointed assistant professor of management in the School of Business and Public Administration of Washington University, St. Louis.

William T. Chaffin has resigned as assistant professor of accounting in the College of Business Administration of the University of Tennessee.

Ralph J. Chances has been appointed assistant professor of economics in the College of Business Administration, Tulane University.

Wen-yu Cheng has been promoted to assistant professor of economics at Marietta College.

M. Gardner Clark, of the New York State School of Industrial and Labor Relations, Cornell University, is in Milan making a study of labor problems in the Italian metal industries under a Fulbright grant.

Neil Corothers, dean emeritus, Lehigh University, has returned from Korea, where he has been on special assignment as general economist, United Nations Civil Assistance Command, Eighth Army, and personal adviser to the Commanding General, Civil Affairs, Korea.

Wilfrid H. Crook is on leave of absence from Colgate University to do further research on the general strike, under the auspices of the Social Science Research Council.

Ben F. Curry was lecturer in labor economics at the University of North Carolina in the winter quarter.

A. M. Dreyer has been promoted from assistant professor to associate professor of economics at the University of South Dakota.

Otto H. Ehrlich has been promoted to associate professor of economics at the Graduate School of Arts and Science of New York University.

Emanuel R. Fuchs has been appointed staff economist to the Department of Interior's Missouri Basin Field Committee.

Paul R. Gawthrop has been promoted to assistant professor of economics and business administration and acting head of the department at Marietta College.

Victor Gerdes, of the University of Wisconsin, has been appointed assistant professor of economics at Beloit College.

Frank F. Gilmore has been appointed associate professor of management in the School of Business and Public Administration, Washington University, St. Louis.

Paul N. Guthrie has been on leave from the University of North Carolina in the fall and winter quarters to serve first as a public member of the Wage Stabilization Board and then as the President's representative in the handling of wage matters involving the railroad system of the country.

Challis A. Hall has been promoted from assistant professor to associate professor of economics at Yale University.

Morrison Handsaker, of Lafayette College, is on leave this semester to act as consultant on labor relations, in Germany, under a grant from the Department of State.

Rector R. Hardin, formerly of Howard College, has been appointed professor of economics in the College of Business Administration of the University of Georgia.

Franciscius Harrison, of Western Reserve University, is visiting associate professor of management at the Ohio State University during the winter and spring quarters of 1953.

Samuel P. Hayes, Jr., has returned to Washington to be assistant director of the Mutual Security Agency, in charge of Far East programs, after spending a year in Djakarta as chief of the ECA-MSA Special Technical and Economic Mission to Indonesia.

Harold J. Heck, of Tulane University, received a Fulbright grant to lecture in the 1952-53 school year at Waseda University in Tokyo, Japan.

Richard L. Hitchcock has been appointed assistant professor of economics at the University of Louisville.

Harvey W. Huegy has returned to teaching at the University of Illinois after serving the Irish Free State as consultant on export problems.

M. J. Jucius, of the Ohio State University, is in Turin, Italy, lecturing in the School of Commerce and Engineering, University of Turin and in the Institute of Technology, under the sponsorship of the National Management Council of the United States and the Turin Manufacturers Association.

E. A. Kincaid has been appointed associate chairman of the McIntire School of Business Administration of the University of Virginia.

Frank H. H. King, formerly of the New Mexico Military Institute, has accepted an appointment as lecturer in economics at the University of Hong Kong.

Milton R. Konvitz, of the New York State School of Industrial and Labor Relations, Cornell University, taught at the Salzburg Seminar last fall and is now engaged in research under a fellowship award of the Fund for Advancement of Education.

Richard Landry has been promoted to associate professor and head of the department of economics and business administration of St. Lawrence University.

James H. Lemly, of Indiana University, has been appointed assistant professor in the College of Business Administration of the University of Georgia.

Richard W. Lindholm has been granted leave from Michigan State College to help organize a department of economics in the university being established at Karachi, Pakistan and to work with the State Bank of Pakistan.

Elmer P. Lotshaw has been appointed assistant professor of finance in the School of Business and Public Administration of Washington University, St. Louis.

Friedrich A. Lutz has resigned from Princeton University to accept a professorship in economics at the University of Zurich, Switzerland.

Arthur Mandel, formerly of the University of California at Los Angeles, is now attached to the 5th Air Force Headquarters in Seoul, teaching economics in the Far Eastern Teaching Program of the University of California.

Donald J. May has been promoted to assistant professor of economics in the School of Business Administration of Emory University.

Lester B. McAllister, Jr., of the University of Oregon, has been appointed assistant professor of economics at Beloit College.

David C. Melnicoff has resigned as business economist for the Federal Reserve Bank of Philadelphia and has accepted a position as assistant to the general manager of the Penn Fruit Company of Philadelphia.

Chester A. Morgan has been appointed assistant professor of labor and industrial management at the State University of Iowa.

Mary E. Murphy, of Los Angeles State College of Applied Arts and Sciences, has been awarded a Fulbright grant to lecture at Queensland University, Brisbane, Australia, in 1953-54.

John A. Nordin has been promoted to professor of economics at the Iowa State College.

Oscar Ornati has been appointed assistant professor in the New York State School of Industrial and Labor Relations, Cornell University, effective in July.

George S. Peck has been appointed assistant professor of money and banking at the State University of Iowa.

Mark Perlman has been appointed assistant professor in the New York State School of Industrial and Labor Relations, Cornell University.

Arthur L. Rayhawk, formerly with the Defense Production Administration, has been appointed professor of business administration and director of the Bureau of Business Research, University of Georgia.

Marshall A. Robinson has returned to his duties as assistant professor of economics at Tulane University after a year's leave of absence with the National Bureau of Economic Research.

John H. Roseboom has resigned from Indiana University to accept an appointment as statistician in the Quality Control Division of the U.S. Air Force at Wright Patterson Field.

Edward H. Sargent, Jr., is assistant professor in the New York State School of Industrial and Labor Relations, Cornell University.

Alfred L. Seelye, of the University of Texas, has accepted an appointment to teach at an Executive Training Institute, Turin, Italy, from December 1952 to June 1953.

Lewis Severson will be lecturer in Canberra University College, Canberra, Australia during the 1953-54 academic year under a Fulbright award.

Leonard S. Silk, after a year spent in research in Norway under a Fulbright grant, is now serving as economic analyst on the staff of the Special Representative in Europe, with headquarters in Paris.

Adolf Sturmthal, of Bard College, is visiting professor at the New York State School of Industrial and Labor Relations, Cornell University, in the current academic year.

Theodore A. Sumberg has accepted a short-term appointment as statistical advisor to the Mutual Security Agency Mission to China, Taipei, Formosa.

John D. Sumner has returned to the University of Buffalo after spending a year and a half as economic advisor in the China Mission of the Mutual Security Administration at Taipei, Formosa.

Daniel L. Sweeney has been appointed assistant professor of accounting at the State University of Iowa.

Arthur R. Upgren is on leave from the University of Minnesota in the winter and spring quarters on a Fulbright fellowship for travel, lecturing and studying in Europe, particularly Denmark.

Rutledge Vining has been appointed acting chairman of the McIntire School of Business Administration at the University of Virginia.

Porter S. Wood, of Marshall College, has been appointed assistant professor of accounting in the College of Business Administration of the University of Georgia.

Dallas M. Young, associate professor of economics at Western Reserve University, has been appointed acting chairman of the regional Wage Stabilization Board for Ohio and Kentucky.

VACANCIES AND APPLICATIONS

The Association is glad to render service to applicants who wish to make known their availability for positions in the field of economics and to administrative officers of colleges and universities and to others who are seeking to fill vacancies.

The officers of the Association take no responsibility for making a selection among the applicants or following up the results. The Secretary's Office will merely afford a central point for clearing inquiries; and the *Review* will publish in this section brief description of vacancies announced and of applications submitted (with necessary editorial changes). Since the Association has no other way of knowing whether or not this section is performing a real service, the Secretary would appreciate receiving notification of appointments made as a result of these announcements. It is optional with those submitting such announcements to publish name and address or to use a key number. Deadlines for the four issues of the *Review* are February 1, May 1, August 1, and November 1.

Communications should be addressed to: The Secretary, American Economic Association, Northwestern University, Evanston, Illinois.

Vacancies

Sales economist and sales management: Would like to employ men of outstanding intellectual ability who have good background in economics and sales psychology with the ability of making the customer want to buy. Must be of highest caliber with the ability to perform liaison with state and civic officials. Car necessary. Under 30, free to travel, interested in $20,000 to $25,000 earnings. Expanding company; leader in its field; has openings in a number of states. Write full details to H. D. Umstott, Vice President, National Headquarters, 2701 14th Street, N.W., Washington 9, D.C.

Economic analyst: Distinguished national organization operating primarily in economic study field desires economic analyst with a background in economics and writing ability, preferably in late twenties or early thirties. Probable location Washington, D.C. Give education, job experience, salary record. Replies will be held in strict confidence. P155

Economics, finance: Wanted a teacher for economics and finance; Ph.D. preferred; salary and rank depending upon training and experience. Begin September, 1953. Write Dr. Herman P. Thomas, Chairman, Department of Economics, University of Richmond, Virginia.

Marketing and management: A Southern university will have an opening in September, 1953, for a young man with a Ph.D., to handle courses in the areas of marketing and management, calling for the rank of instructor or assistant professor. Selection of courses can be adjusted. Salary is open. P156

Marketing: Midwestern university wants man for one-year assignment only, to teach marketing, advertising, and sales. This is a temporary appointment to replace a man who is to study for his doctorate. Position open as of September, 1953. P157

Economists Available for Positions

Personnel administration, labor relations, banking, theory: Man, 36, married. Experienced teacher or administration; 12 years of experience in leading universities and business firms. Research, publications, government, and business consultant. E194

Economics and business administration: Man, 49, B.S. (agricultural economics), M.A., and near Ph.D. (marketing). Seventeen years of college and university teaching; extensive business and commercial experience; over 4 years as government economist or business analyst. Available immediately, preferably Pacific Northwest. E239

Money and banking, fiscal policy, business cycles, international economics, investments: Man, 38, married, Ph.D. Experience as a newspaperman and 5 years of teaching experience. Desires research or teaching position. E263

Labor economics, industrial and labor relations, labor law, personnel administration, economic principles: Man, 27, B.A. (*cum laude*); M.B.A. (industrial relations and personnel administration), LL.B., New York University. Teaching experience; 3 years of experience in collective bargaining negotiations, preparing and arguing arbitration cases, administering health and welfare plan; thorough knowledge of NLRB procedures and WSB and SSB regulations. Available now for teaching or research. E270

Economic analysis, business cycles, public finance, money and banking, national income, international economics, statistics: Man, 34, married, Ph.D. residence completed. Seven years as economist-writer with research and investment organization; brief teaching experience; research in Middle East conomy. Seeks research, writing, or teaching position, West Coast preferred. E278

Economic principles, theory, history of economic thought, American economic and financial history, security markets, corporation finance, labor and allied subjects: Man, 39, married, B.S. (*magna cum laude*), 1949, M.A., 1950, all examinations and course requirements toward Ph.D. completed and expects to finish dissertation at New York University by June, 1953. Now on teaching staff of Eastern college. Seeks teaching position starting September, 1953. E318

Economics, business law, marketing, retailing, labor relations, labor law, labor economics: Man, 40, B.S., 3 years of law, completing thesis for LL.D., June, 1953, at European university. Seven years of university teaching; 4 years of industrial experience; 10 years of business experience. Available after June, 1953. E336

Money and banking, business cycles, theory of statistics, business statistics, economic theory, history of economic thought, economic history, international economics: Man, 31; Ph.D. Brief teaching and substantial research experience. Desires teaching and/or research position. Available in September, 1953. E382

International trade, corporation finance, investments, economic theory, history of economic thought, management, accounting: Man, 30, M.S. (management), M.A. (economics), Ph.D. expected in June, 1953, University of Illinois. Brief experience in teaching; 5 years in foreign trade and business administration. Available for academic or nonacademic appointment in September, 1953. E414

Economic analysis, public finance, foreign trade, money and banking, statistics, U. S. economic history, economic geography, personnel: Woman, 29, M.A., Columbia University. Four years of experience as research-administrative assistant. Available immediately. E418

Labor, history of economic thought, elementary economics, public finance: Man, 32, married, Ph.D. Four years as instructor in Big Ten university. Now employed by government agency and as assistant professor at a large Ohio university. Research experience and publications. Desires teaching position or job with research and writing opportunity. Available in fall, 1953, or January, 1954. E419

Air transportation, international economics, international organization, history of economic thought, economic history, contemporary economic theory, public finance: Man, 32, B.A., M.A., Ph.D. in economics; 11 years of economic research in several areas of the federal government, including national income, fiscal policy, international economics, and air transportation; currently employed as economist in one of the aviation agencies of the federal government. Desires a teaching position in economics. E420

Statistics, economics, organization and administration: Man, 34, married. Teaching and practical experience and command of several languages; seeks position as teacher, economist, or research worker. E421

Transportation, public utilities, business and government, insurance, economic history, theory, other economics and business: Man, 33, married, M.B.A., Ph.D., California. University teaching; government economist; some business experience. Desires permanent teaching and/or research position. Available in spring or fall of 1953. Roy J. Sampson, Box 304, Route 1, Forest Grove, Oregon.

International economics, money and credit, principles, Far Eastern economics, public finance, business cycles, price and income analysis, economics of mobilization, economic theory and its history: Man, 30, married, B.A., M.S., all course requirements for Ph.D. Five years of teaching; 3 years as assistant professor and division head, Western state college. Chief economist, territorial office, stabilization agency, since July, 1951. Seeking teaching, research, or combination. Available in spring, summer, or fall semesters, 1953. E422

Principles, economic history and institutions, government and business, structure of the American economy, economics of industry, regional planning, comparative economic systems: Man, 29, will receive Ph.D. in January, 1953. Four years of teaching experience and 2 of research. Desires teaching position. Prefers West Coast but will consider any location. Available in June or September, 1953. E425

Transportation, U. S. economic history, labor economics, political economy: Man, 32, B.A. (economics), M.A. in Education, Yale, M.A. (economics), LL.B., Boston, Ph.D. residence requirements completed. Experience in teaching, research, and writing. Seeks teaching or research position. E428

Labor problems, trade unionism, economic principles, economic analysis, social security, money and banking: Man, 29, married, Ph.D. residence and written examinations completed. Teaching experience at two large New York universities. Now employed by federal government. Desires teaching position. Available immediately. E429

Corporation finance, money and banking, accounting, consumer and real estate finance, investments: Man, 41, married, Ph.D. in finance and C.P.A. Extensive research experience with government agencies, Federal Reserve Bank, and a private research organization; 8 years of undergraduate and 3 of graduate teaching; numerous publications. Currently in an administrative capacity with a research organization. Desires to return to teaching. Available in September, 1953. E432

Labor, comparative economic systems, current economic problems, economic history, economic and social thought, money and banking, public finance, international trade, personnel and manpower policy: Man, 37, married, M.A., and Ph.D. residence completed at Columbia University. Six years of teaching economics and social science as well as background in adult education; 3 years as editor and research director in the book publishing and public relations field dealing with labor relations; 3 years of personnel and industrial relations work in industry; market and opinion research experience. Interested in teaching, research, writing, editorial and/or administrative positions. E434

Agricultural economics, economic geography, economic analysis, international relations, international administration, foreign area specialist (Eastern Europe, Far East, Pacific Area): Man, 34, married, B.S., Cornell (agricultural economics); working on graduate thesis in underdeveloped area development, American University. Three years in private industry, including 1 year private international organization; 6 years with federal government, presently employed in Washington, D.C. Strong sales background. Interested in administrative or research position, government or private industry; will consider outstanding sales position, particularly export-import field. Willing to relocate; particularly interested in Mountain States or far West. E435

Economic principles, business cycles, public utilities, transportation: Man, Ph.D., California. Broad experience in teaching and as economist with nationally known corporation. Available in September, 1953. E436

Economic analysis, business cycles, labor economics, fiscal policy, money and banking, history of economic thought, statistics: Man, 34, married, A.B., M.A., Ph.D., from a large Eastern university (*magna cum laude*). Two years of experience in economic research and accounting in a large corporation; 4 years of experience in theoretical economic research in the federal government; publications. Desires a position somewhere in the West in fields of economic research, industrial relations, marketing, or teaching. Available immediately. E437

Industrial management, labor relations, personnel management: Man, 39, married, Ph.D., Midwestern state university. Academic and business experience. Supplementary areas of interest and research are industrial supervision and management theory. Desires academic responsibility for one of the listed areas. Available in summer or fall, 1953. E438

Labor law, business law, public control of business, etc.: Man, Ph.D., LL.B., associate professor. Position wanted for summer, 1953. E439

International trade, resources, finance, economic principles, etc.: Man, 33, married, B.S. (management), M.B.A. (foreign trade); will receive Ph.D. in June, 1953. Five years of university teaching; 1 year of foreign service (international negotiation); several years of industrial and commercial experience. Desires teaching-research post, with desirable climate and topography. Available in September, 1953. E440

Economic analysis, international economics, labor economics, housing, money and banking, business cycles, theory and history of ideas: Man, 35, married, Ph.D. Five years of teaching experience; 4 years of research in federal government and abroad on Fulbright and other fellowships; presently with European Office, Mutual Security Agency. Desires teaching or research position. E441

Industrial organization and control, economic principles and theory, labor economics, money and banking, theory of business, marketing, business organization and management policy: Man, 34, married, B.A., Penn State; M.A., California; Ph.D., Harvard, dissertation half completed. Five years of teaching experience; 2 years of research experience; 1 year as government economist. Currently at West Coast university conducting specialized course for industry. Desires teaching or research position in economics or business administration. Available in September, 1953. E442

Economic principles, commercial law, history of economic thought: Man, 33, married, B.A., 1950, M.A., Duke, 1952, plus 1 year of course work toward Ph.D. Six years of clerical experience in foreign banking; now teaching at Southern college. Seeks teaching position starting in September, 1953. E443

Principles of economics, labor problems, statistics, the economy of Japan: Woman, 34, Ph.D. World travel; 7 years of successful college teaching. Prefers Northeastern or Midwestern location. Available in summer, 1953. E444

International trade, marketing, industry studies, economics of military government: Man, 35, married, B.A., Southern Methodist University, M.A., 1952; certificates from Industrial College of the Armed Forces and Armed Forces Information School. Three years of marketing and distribution; 2 years of management consulting; 3 years of teaching in Military Government School. Accomplished public speaker. Seeks position as educational director of trade organization, administrative officer of bureau of business research, and/or liaison and sales promotion. E445

Economic theory, international economics, money and banking, history of economic thought, statistics, mathematics for economists: Man, 28, M.A., all examinations and course requirement toward Ph.D. completed and expects to finish dissertation at the University of Chicago by summer, 1953. Seeks research or teaching position. E446

Theory, systems, international economics, economic history, history of economic thought, social control: Man, 34, Ph.D., Columbia. Formerly associate professor at Eastern college; now in responsible government position; publications. Seeks academic post. E447

International economics, money and banking, labor economics, industrial management, economic theory, history of economic thought: Man, 28, M.A. in Economics, Ph.D. expected in August, 1953, University of Illinois. Brief experience in teaching, research, and foreign trade administration. Available for academic or nonacademic position in September, 1953. E448

Social control of business, business law, labor, economic principles, business administration: Man, 26, M.A., J.D., Ph.D. candidate, outstanding record. Books; 6 years of teaching experience in leading institutions at graduate and undergraduate levels; stimulating teacher; interested in writing; excellent references. Faculty member at leading private university. Desires academic or nonacademic employment for summer, 1953; also will consider transfer to top-notch liberal arts college. Interested in opportunities for foreign travel. E449

Labor economics, personnel management, industrial sociology, comparative economic systems, market research: Man, 35, Ph.D. expected in spring, 1953. Seven years of teaching experience; at present head of small economics and sociology department; several years of industrial, market, opinion survey experience; project director of research foundation. Multilinguist; extensive foreign travel and research. Interested in teaching and/or research position. E450

Economic development, public finance, international and regional economics, monetary economics, U. S. economic history, statistics: Man, 33, married, Ph.D., Columbia University. Five years of teaching experience; 2 years as consultant in economic development to territorial government; research, writing, and business experience; foreign work and travel. Available for teaching, research, or nonacademic position. E451

Economic fluctuations, economic system of Soviet Union, economic demography, with special consideration of problem of migrations: Man, 32, doctor in economics at an outstanding European university; 1 year of supplementary study at an outstanding American university. Author of a book. Desires employment as instructor or research worker. E452

Finance, international economics, statistics, accounting, economic geography: Man, 41, married, B.S. (business administration), M.A. (education), Ph.D. (economics). Now serving as statistician for leading petroleum company. Ten years of college and university teaching, with consulting and publications. Seeks university position. Available in September, 1953. E453

Comparative economic systems, history of economic thought, international trade, economic theory, money and banking, principles of economics: Man, 26, A.B., Indiana University; M.A., Columbia University; now completing Ph.D. residence requirements at Western university. One year of teaching experience. Seeks position at Eastern college or university. Available in September, 1953. E454

Labor, principles, elementary statistics, international economics, theory, history of economic thought, comparative economic systems: Man, 26, B.A., M.A., Ph.D. residence requirements completed and dissertation nearing completion. One and one-half years of teaching experience; 2 years as research fellow in industrial relations institute; 1 year as industrial relations analyst with Wage Stabilization Board. Three published articles. Currently part-time instructor in Eastern university. Seeks teaching post or position with industrial relations institute. Available in September, 1953. E455

American economic history, corporation finance, business cycles, economic theory, statistics, economic principles: Man, 27, married, B.A., New York University; M.A., Columbia University; mechanical engineering training, Polytechnic Institute of Brooklyn. Seeks part-time evening position teaching at a college in the New York metropolitan area. E456

Marketing research analysis: Above young man also seeks marketing research analyst position with a consulting engineering firm in the New York area to combine his educational training with his experience as a Social Science Analyst for the Bureau of the Census and marketing director for the Israel Bond Drive in Nassau County. Contacts in both industry and government. Excellent references available upon request from the Placement Office at Columbia University. E456

"Hello, Mother! It's Me!"

"Thought I'd call you up and find out if you arrived OK.

"No, it didn't take long. Seemed like I'd just given the operator the number when I heard your voice.

"Good thing I remembered to jot down Aunt Sue's number when you were there the last time."

YOU'LL FIND THIS IS A GOOD IDEA FOR YOU, TOO...

Call By Number

You save time on out-of-town calls when you give the Long Distance operator the number you want.

So here's a helpful hint. Write down the out-of-town numbers you already know. If there's a new number you don't have—or an old one you've forgotten—be sure to add it to the list when the operator gives it to you.

The Bell Telephone Company in your community will gladly give you a free Telephone Numbers Booklet.

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BERNARD F. HALEY, Managing Editor
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SOME NOTES ON MULTIPLIER THEORY

By RALPH TURVEY[1]

The theory of the multiplier may be viewed in either of two ways. It may be regarded as the specification of a set of relationships which the econometrist is to measure, or alternatively as of purely qualitative significance, its purpose being to explain one aspect of the determination of national income. In the latter case its function is to display the relevance and *modus operandi* of various factors.

In either context, the tendency in recent writings has been to develop a less aggregative approach as, for example, in the discussion of matrix multipliers. The present article is intended as a further contribution in this direction, but it aims at synthesis as well as innovation.

The first section restates the static theory for an economy with a government and with foreign trade, and in order to achieve consistency with the social accounting approach makes a sharp distinction between firms and households. This involves a clear separation of business saving from personal saving, a good example of useful "disaggregation." Section II analyses the effects on national income of changes in government spending and taxation without being confined to one type of tax and one type of spending. It is shown that the theorem that a balanced budget-increase has a multiplier of unity is a very special case. Section III, which uses a pure Stockholm School approach, demonstrates how the relationship between saving and investment *ex post* and *ex ante* can only be understood if, consonantly with the division between households and firms, the markets for factors and for goods are distinguished. It is also shown that since saving (*i.e.*, not-spending) is a derived concept, analysis in terms of spending is preferable because of its directness.

[1] The author is reader in economics at the London School of Economics, University of London.

I. *The Static Multiplier*

The multiplier analysis of the determination of the level of national income is essentially a special case of general equilibrium theory, differing from it in respect of a number of simplifying assumptions.[2] For the purpose of this paper, the main assumptions may be given the following form:

1. Groups of economic units are consolidated into sectors which are treated as units, *i.e.*, the analysis is macro-economic.[3]
2. Only income effects enter into the behaviour equations.
3. Certain magnitudes, such as investment, are autonomously determined.
4. The supply curves of all newly produced goods and of factor services are infinitely elastic; thus no distinction is made between the real and money values of the variables.

The analysis is, to start with, in terms of comparative statics and relates to the short period, though one aspect of growth economics is briefly mentioned.

The simplest way of describing the system is to list the transactions which enter into the analysis, as in the table below. Since this table is largely self-explanatory, little need be said about it. Items not shown, such as profits tax and wage payments by government are assumed to be zero. Indirect Taxes (and Subsidies) are on consumer goods only,

Paying Sector / Receiving Sector	Firms	Households	Government	Rest of the World
Firms	Interfirm transactions in intermediate & capital goods	Consumption (at market value)	Government Purchases Subsidies	Exports
Households	Factor Purchase (=Factor Sale)		Transfers	
Government	Indirect Taxation	Income Tax		
Rest of the World	Imports			

[2] Compare Burgess Cameron's derivation of the Leontief system from general equilibrium theory. "The Construction of the Leontief System," *Rev. Econ. Stud.* (1950-51), XIX (1), 19-27.

[3] Richard M. Goodwin "The Multiplier as Matrix," *Econ. Jour.* (Dec. 1949), LIX, 537-55 and John S. Chipman, *The Theory of Intersectoral Money Flows and Income Formation* (Baltimore, 1951) provide a formal analysis of *n* sector models.

and are paid (received) by Firms which are also assumed to handle all Imports. The term Factor Purchase is used to include all income payments by Firms to Households: wages, salaries, rent, interest and dividends.

Neither National Income nor Investment[4] is shown explicitly, the former because it is a derived concept, and the latter because it consists of several components, one of which, physical increases in Firms' stocks of their own products valued at market price, is only a payment flow to the extent of the necessary Factor Purchase. Investment being that part of the national output not sold by Firms to other sectors, the relationship between it and National Income is given by the following identity:

Y	≡	I	+	G	+	E	+	C	+	L	−	K	−	M (1)
National Income (output) at factor cost		Investment		Government Purchases		Exports		Consumption		Subsidies		Indirect Taxation		Imports

National Income exceeds the wages, salaries, rent, interest and dividends received by Households (Factor Sale = Factor Purchase) by the amount of gross business saving.[5] The Disposable Income of Households is related to their Factor Sale as follows:

D	≡	F	+	T	−	U	(2)
Disposable Income		Factor Sale (Purchase)		Transfers		Income Tax	

In order to explain the determination of National Income it is now necessary to specify the "spending functions" of the various sectors:

Rest of the World

The value of Exports (E) is taken to be exogenously determined.

Government

Government Purchases (G) of newly produced goods from Firms is assumed to be constant. Subsidies and Transfers are dealt with below.

Households

C	=	α_3	+	$h \cdot D$	(3)
Consumption at market value		constant term		Households' Disposable Income	

[4] Both of which are taken gross throughout.

[5] Plus corporate taxation. This is assumed to be zero in this section of the paper.

h is the marginal propensity of Housholds to consume with respect to their Disposable Income.

$$\underset{\text{Income Tax}}{U} - \underset{\text{Transfers}}{T} = \underset{\text{constant term}}{\alpha_4} + \underset{\text{Factor Sale}}{t \cdot F} \tag{4}$$

where t is the marginal rate of Income Tax net of Transfers. The constant term will be negative, since at low income levels Transfers will exceed Income Tax and at high income levels Income Tax will exceed Transfers which may fall as Factor Sales and employment rise.

Firms

Firms pay Indirect Tax and receive Subsidies on their sales of consumer goods. Assuming proportionality:

$$\underset{\text{Indirect Taxation}}{K} - \underset{\text{Subsidies}}{L} = \underset{\text{Consumption at market value}}{k \cdot C} \tag{5}$$

k is the marginal (and average) rate of Indirect Taxation minus Subsidies expressed as a fraction of Consumption at market value.

This, and equations (3) and (4) involve an aggregation problem. Thus a simple relation between Consumption and the Disposable Income of Households requires either that changes in the distribution of the latter have no effect on Consumption (all Households have the same h) or that the distribution is a function of the level of Disposable Income.

The aggregation of all firms into one sector is more complicated, because they not only make purchases from other sectors but also purchase capital goods and intermediate goods (materials) from one another. Consider first a single firm. Apart from Indirect Taxes, its purchases (payments) may be listed as follows:

(a) Intermediate goods from other firms or the rest of the world. Some of these purchases will vary with output while others, *e.g.*, purchase of fuel for heating and stationery for the office, will be overheads. In addition a firm may invest by increasing its stocks of intermediate goods.

(b) Capital goods from other firms or the rest of the world. Given both the total investment of the firm and its composition, this item will be constant.

(c) Rent and interest paid to Households. The analysis being short-term, these overheads are assumed constant.

(d) Wages and salaries paid to Households, whether overheads such as payments for management and research (assumed constant) or variable labour cost.

(e) Dividends paid to Households. These depend upon profits which, given (a) to (d) above, are a function of sales.

The investment carried out by a firm consists of three components: purchase of newly produced capital goods,[6] purchase of intermediate goods for stock and increase in stocks of its own product, this last component being the difference between output and sales. The items (a) to (e) above can all be taken to be functions of Sales + Investment on the assumption that the composition as well as the magnitude of Investment is constant. Thus the Factor Purchase, Import Purchase and Purchase of Goods from other firms of any firm are functions of the sum of the Sales of its product and its Investment.

The aggregation problem[7] consists of deriving from all these functions two functions relating aggregate Imports and aggregate Factor Purchase to the sum of aggregate Investment and aggregate Sales (by all firms together) of newly produced goods to all other sectors. Assuming linearity[8] the two functions can be written:

$$\underset{\text{Imports}}{M} = j\cdot(\underset{\text{Investment}}{I} + \underset{\substack{\text{Government}\\\text{Purchases}}}{G} + \underset{\text{Exports}}{E} + \underset{\substack{\text{Consumption}\\\text{at factor}\\\text{cost}}}{C-K+L}) \tag{6}$$

$$\underset{\substack{\text{Factor}\\\text{Purchase}}}{F} = \underset{\substack{\text{constant}\\\text{term}}}{\alpha_7} + b\cdot(I + G + E + C-K+L) \tag{7}$$

The constant term is equal to overheads (other than depreciation) plus any constant term in the dividend payment function. The significance

[6] From the point of view of the individual firm purchases minus sales of second-hand capital goods should be included, but for the economy as a whole these items cancel out.

[7] It may well be that the aggregate functions are derivable only on the assumption that all firms are identical, *i.e.*, in a one-commodity world. Certainly it will not do to assume that the proportional composition of final output and of the inputs of each separate firm is invariant with respect to the level of output, for that would be inconsistent (a) with the treatment of some inputs as overheads which are fixed in the short run and (b) with the assumption that I, G and E are given.

Goodwin maintains (*op. cit.* pp. 541-43) that the Keynesian system implicitly assumes that the marginal propensity to save of all firms is zero so that if output increases by x total Factor Purchase will increase by x whatever the composition of the increase in output. (This relates to a closed economy.) He rightly says that this procedure has the disadvantage of ignoring "the phenomena of internal financing, of the failure to disburse earnings, of heavy fixed charges and of the payment of dividends above current earnings" (p. 543).

[8] Even if this is not an approximation there is the additional complication that straight-line relationships may be kinked. It is reasonable, for example, to assume that dividends equal half net profits, but unreasonable to suppose that when net losses are being made shareholders will pay money to their firm!

of b and j can best be illustrated by an example: Suppose that when output and sales rise by £100 an additional £50 must be spent on labour and £10 on imported raw materials and that of the £40 increase in profit half is paid out as additional dividends. Then $b = 0 \cdot 7$ and $j = 0 \cdot 1$. It will be seen that $(1 - b - j)$ is the marginal propensity of firms to save with respect to (Investment + Sale of Goods to other sectors).[9] $(b + j)$ is not the marginal cost of final output to the sector of Firms, since it refers to money value not to quantity. It is not even the marginal cost of £1 worth of output, since it includes marginal dividend payments and the import of finished goods as well as materials.

Solution of the seven equations for National Income (Y) gives:

$$Y = \frac{I + G + E + (1 - k)\ [\alpha_3 + h \cdot \{-\alpha_4 + (1 - t) \cdot \alpha_7\}]}{1 - b \cdot (1 - t) \cdot h \cdot (1 - k)} (1 - j) \qquad (8)$$

The numerator, the multiplicand, consists of the "injections" Investment, Government Purchases and Exports together with the invariant part of Consumption (at factor cost) due to the constant terms in the Consumption, Tax-transfer and Factor Purchase functions—all multiplied by $(1 - j)$ to remove the import content.

The denominator can be explained as follows: Of an increase in Investment or Sale of Goods, b is paid to Households and t of this is taken in Income Tax. Households spend h of what is left on Consumption, the value at factor cost being $(1 - k)$ of this.

A geometrical version of the multiplier is given in Figure 1 where the dashed lines show the equilibrium position. The N.E. quadrant shows Consumption at market value as a function of Disposable Income (3)[10] and Indirect Taxation minus Subsidies as a function of Consumption expenditure (5). The N.W. quadrant adds Consumption at factor cost to Investment, Exports and Government Purchases (1). The S.W. quadrant shows their sum as determining Factor Purchase and Imports (7) and (6). The S.E. quadrant relates Disposable Income to Factor Sale (2) and (4).

The multiplier formula given above (8) differs from the more customary ones in that, consonantly with the clear division of the economy into sectors, the functions relating Factor Purchase to total spending and Consumption to Disposable Income are sharply distinguished instead of being lumped together into one consumption function, the orthodox consumption function, which fails to distinguish Firms behaviour from Household behaviour. The relationship of the

[9] Equals National Income plus Imports.

[10] The figures in brackets refer to the numbers of the equations.

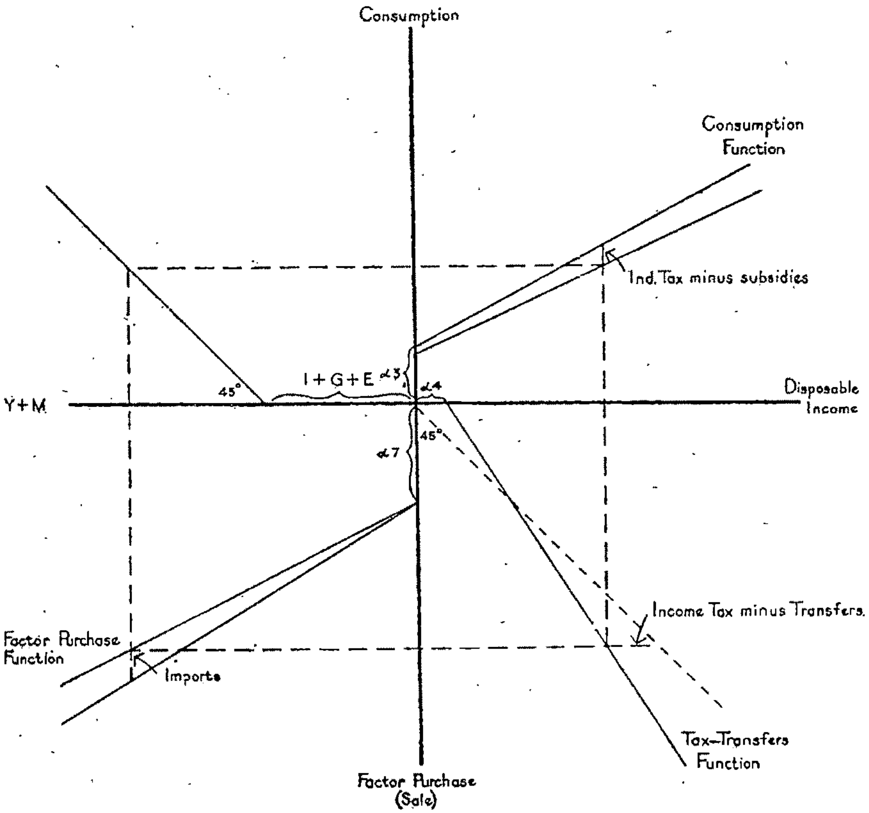

FIGURE 1

aggregative functions to the decision-making of individual economic units is made clear and there is no danger of forgetting business saving in discussing the relation of Consumption to National Income.

The advantage of the distinction is apparent even when, as in the present analysis, only income effects are considered.[11] This is shown in the dynamic analysis of the next section, but a minor example may be given here. In modern aggregative economics rent seems to have disappeared, widening the division between macro- and micro-theory. This is quite unnecessary, for rent (in the sense of periodic contractual payments for the use of real property owned by Households) is simply a payment from Firms to Households,[12] which is constant in the short

[11] The distinction is essential in the analysis of inflation. See my paper "Some Aspects of the Theory of Inflation in a Closed Economy," *Econ. Jour.* (Sept. 1951), LXI, 531-43.

[12] Or from some Households to others. This is not considered here since it merely redistributes income between Households, and such redistribution is assumed to have no effect on total Consumption.

period. Along with interest charges and other overheads, rent enters into the constant α_7 in the Factor Purchase function.

Suppose that the level of rents is revised upwards against Firms. Unless this causes some firms to go out of business α_7 will rise by the same amount and the amount of profits at any given level of National Income will fall correspondingly. It may well be that dividends will fall less (*i.e.*, the fall in b[13] will not entirely offset the rise in α_7) so that there is a net expansionary effect and the equilibrium level of National Income rises.

All this could, of course, be subsumed under the head of a redistribution of income raising the customary consumption function. Since, however, this expansionary effect need not depend on different propensities to consume as between share-owners and real estate owners but can be entirely a matter of redistribution between Firms and Households, it cannot be explained without distinguishing the two sectors.

Another example is given by one aspect of growth economics: in orthodox terms, the problem of explaining why the long-run marginal propensity to consume exceeds the short-run marginal propensity. One possible answer, which has nothing to do with consumer behaviour, is that the marginal propensity to spend of Firms is much less in the short run than in the long run. In the short run, when overheads are fixed, only b of an increase in Sales will be paid out to Households. In the long run, however, if output rises so that Gross Investment exceeds replacement, α_7 will gradually expand, since rents may rise and new capacity will have overhead labour and material costs and may have to bear some interest charges. The ratio of the time rate of increase in α_7 to the rate of investment will depend on such factors as capital intensity, the rate of interest and the debt-equity ratio. In the simple case where all new investment is entirely capital widening, creating new firms with the same capital intensity, dividend policy and debt-equity ratio as existing firms and where the rate of interest is constant over time, the secular rise in α_7 will not be offset by any fall in b. As a result the Factor Purchase function (and hence the orthodox consumption function) will show a secular upward movement, even though the Consumption-Disposable Income function (3) be unchanged.

II. *The Effects of Budget Changes*

The multiplier analysis will now be used to analyse the income effects of changes in the government's budget, both on the revenue and expenditure side.

[13] b may fall not only because of a decrease in the profits-output function but also because of a fall in the dividends-profit function, since the rise in overhead costs may increase the desire of firms to accumulate reserves.

In order to do this it is first necessary to point to an ambiguity in the meaning of a "given budget change." Suppose, for example, that t, the marginal rate of Income Tax net of Transfers, is raised so that at the original equilibrium position the yield of Income Tax minus Transfers is increased by £x. As is evident from Figure 1 and equation (8) this will lower the equilibrium level of both National Income and Factor Purchase. Since the latter determines Income Taxation minus Transfers, it follows that in the new equilibrium their net increase will be less than £x. Furthermore, the other consequential changes will include a fall in the cost of Subsidies and the yield of Indirect Taxation. More generally:

1. Unless a change in government expenditure or taxation has no effect on the variable of which it is a function, the impact change will equal the ultimate change[14] only if the marginal rate of expenditure or tax is zero.

2. Unless all other marginal rates of government expenditure and taxation are zero, the ultimate change in the budget deficit or surplus will equal the ultimate change in the expenditure or tax which is altered only if the alteration has no effect on the variables of which these other expenditures and taxes are functions. Suppose, to give an algebraic example, that the marginal rate of Indirect Tax is raised from k to k',[15] Subsidies being zero. If C_0 is the level of Consumption at market value in the initial equilibrium, the impact increase in the yield of Indirect Taxation will be $(k' - k) \cdot C_0$. Given unchanged values of Investment, Exports and Government Purchases, the resulting fall in National Income will equal:

$$\frac{(k' - k) \cdot C_0 \cdot (1 - j)}{1 - b \cdot (1 - t) \cdot h \cdot (1 - k')}$$

causing a fall in Consumption at market value $b \cdot (1 - t) \cdot h$ times as great, so that the ultimate change in the yield of Indirect Taxation will be:

$$(k' - k) \cdot C_0 \cdot \left(1 - \frac{(1 - j)}{1 - b \cdot (1 - t) \cdot h} \cdot b \cdot (1 - t) \cdot h \cdot k'\right)$$

The fall in the Budget Deficit, or rise in the Budget Surplus, will be less than this by the fall in the yield of Income Tax minus the rise in Transfers,

[14] In the sense of the difference between its value in the initial equilibrium and in the new equilibrium.

[15] The following results can be obtained very simply with the diagram by lowering the lower of the two curves in the N.E. quadrant and finding the new equilibrium position.

$$-\Delta U + \Delta T = -\frac{(k - k')\cdot C_0\cdot (1 - j)\cdot b}{1 - b\cdot (1 - t)\cdot h\cdot (1 - k')}\cdot t$$

The net effect, however, must be to decrease a deficit or increase a surplus; it is impossible for the fall in Income and Consumption to offset the rise in tax rate completely. This can easily be shown. The definitions:

$$\underset{\text{Business Saving}}{S_B} \equiv \underset{\text{National Income}}{Y} - \underset{\text{Factor Purchase}}{F}$$

and

$$\underset{\text{Household Saving}}{S_H} \equiv \underset{\text{Disposable Income}}{D} - \underset{\text{Consumption at market value}}{C}$$

combined with equations (1) and (2) give:

$$\underset{\text{Investment}}{I} + \underset{\text{Exports}}{E} + \underbrace{G+T+L-U-K}_{\text{Budget Deficit}} \equiv \underbrace{S_B+S_H}_{\text{Total Saving}} + \underset{\text{Imports}}{M}$$

By assumption I, E and G are constant, so, taking the differences between the initial equilibrium and the new equilibrium:

$$\Delta T+\Delta L-\Delta U-\Delta K=\Delta S_B+\Delta S_H+\Delta M$$

Since Income falls, so will Saving and Imports, and the left-hand side of this equation must therefore have a negative value too, which means a smaller deficit or bigger surplus.

A generalized analysis of the multiplier effect of budget changes can now be given.

Government expenditures can be classified according to their direct income-creating effect, and an "income-creating coefficient" whose value will be in the range ($0 \rightarrow +1$) can be attached to each type. For example the purchase of newly produced goods with no import content will have a coefficient of unity, while the coefficient for tax-free Transfers will be the marginal propensity to consume of the recipients multiplied by $1 - k$. The coefficient for government purchase of land will be zero or almost zero since this is a sale on capital account.

Similarly, an "income-destroying coefficient" whose value will be in

the range ($-1 \rightarrow 0$) can be attached to each type of government revenue.[16] Thus the coefficient for death duty will be almost zero, and that for indirect tax on goods with no import content will be minus unity if there is money illusion in the consumption function.[17]

With the use of these coefficients the analysis falls into four stages:

1. Calculate the change in each type of expenditure and each type of revenue at the initial equilibrium position.
2. Multiply each such change in expenditure by its (positive) income-creating coefficient and each such change in revenue by its (negative) income-destroying coefficient.
3. Obtain the algebraic sum. This is the multiplicand.
4. Multiply by the multiplier calculated with the new marginal tax and expenditure rates.

It is evident that there are many possible combinations of initial and ultimate change in the deficit or surplus and change in National Income. Consider the set of cases where the budget change is confined to one revenue item and one expenditure item and their impact changes are equal in magnitude and sign so that initially the Budget Deficit or Surplus is unaltered. The multiplicand equals this change multiplied by the algebraic sum of the relevant pair of income-destroying and income-creating coefficients. It obviously may be negative, zero or positive.

In conclusion the special cases where the algebraic sum of the two coefficients is equal to the reciprocal of the multiplier may be noted. Here the change in National Income will equal the change in the budget; the multiplier of a balanced budget change is unity. One of these special cases, illustrated in Figure 2, has received considerable attention of late.[18] Assuming that: (1) Household saving is the only

[16] Compare G. L. S. Shackle, "The Deflative or Inflative Tendency of Government Receipts and Disbursements," *Oxford Econ. Papers*, No. 8 (Nov. 1947), pp. 46-64, where he constructs "inflative and deflative indices," both for full-employment conditions and for under-employment conditions. These are not the same as the coefficients defined above.

[17] As is assumed throughout this chapter; *i.e.*, it is supposed that the function relating Consumption expenditure to money Disposable Income is not shifted when a change in Indirect Tax or Subsidy rates alters the price-level of consumer goods. E. Cary Brown in his paper "Analysis of Consumption Taxes in Terms of the Theory of Income Determination," *Am. Econ. Rev.* (Mar. 1950), XLI, 74-89 shows that even "in the absence of a money illusion, consumption taxes are more effective, dollar for dollar, in cutting back consumer outlays than are income taxes—and this conclusion holds even though everyone be assumed to have an identical marginal propensity to consume. However they are less effective than when a money illusion is present" (p. 85).

[18] See the bibliography given in P. A. Samuelson, "The Simple Mathematics of Income Determination," *Income, Employment and Public Policy* (New York, 1948), p. 140; and Jørgen Gelting, *Finansprocessen i det ØKonomiske Kredsløb* (København, 1948), where four balanced budget multipliers are distinguished.

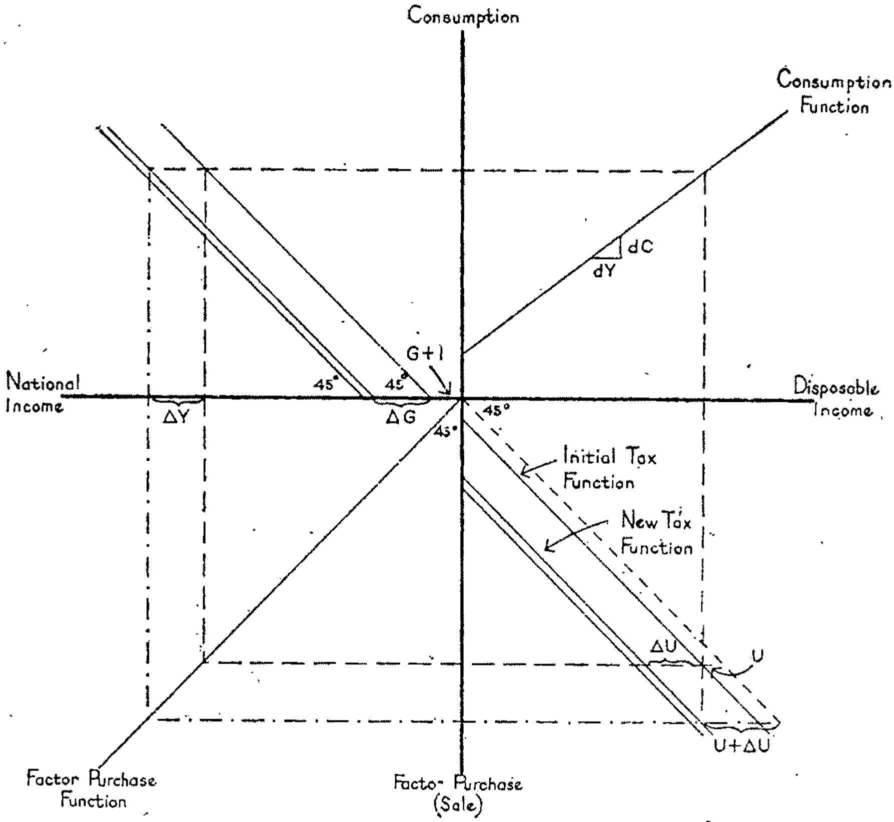

FIGURE 2

leakage; *i.e.,* Business Saving, marginal rates of government expenditure, all marginal tax rates and the marginal propensity to import are all zero so that the ordinary multiplier is the reciprocal of $1 - \frac{dC}{dY}$; (2) Government Purchases (G) and Income Tax (U) go up equally ($\Delta G = \Delta U$); then the impact and the ultimate change in the budget will both equal the change in National Income (ΔY) since the algebraic sum of the two relevant coefficients will be $1 - \frac{dC}{dY}$. This particular special case loses its paradoxical flavour when viewed in the light of a more general analysis.

III. *Some Aspects of the Dynamic Multiplier*[19]

For the purposes of this section, which is concerned with such matters as the multiplier time period and the relation between Saving and Investment during a multiplier process, the most useful method of analysis is that of the Stockholm School with its distinction between prospective (*ex ante*) and retrospective (*ex post*) magnitudes.[20] If the variables of the analysis are to be magnitudes rather than schedules, it is necessary to use what Lindahl calls the "disequilibrium method" where the prices of both goods and factors are fixed and made known at the beginning of each period when purchasers make their plans. The period, which is the interval between the making or revising of plans on the basis of expectations formed in the light of past experience, will be assumed to be coterminous for all Firms and Households.

In order to concentrate on essentials, this section is in terms of a two-sector model without a budget or foreign trade. The equations of the previous section are thus much simplified, the static model becoming:

$$\underset{\text{National Income}}{\mathrm{Y}} = \underset{\text{Investment}}{\mathrm{I}} + \underset{\text{Consumption}}{\mathrm{C}} \tag{1'}$$

$$\underset{\text{Consumption}}{\mathrm{C}} = \underset{\text{constant term}}{\alpha_3} + \underset{\substack{\text{Factor Purchase}\\ (=\text{Factor Sale})}}{\mathrm{h}\cdot\mathrm{F}} \tag{3'}$$

$$\underset{\text{Factor Purchase (Sale)}}{\mathrm{F}} = \underset{\text{constant term}}{\alpha_7} + \mathrm{b}(\underset{\text{Investment}}{\mathrm{I}} + \underset{\text{Consumption}}{\mathrm{C}}) \tag{7'}$$

so that given, as before, the magnitude and composition of Investment,

$$\mathrm{Y} = \frac{\mathrm{I} + \alpha_3 + \mathrm{h}\cdot\alpha_7}{1 - \mathrm{b}\cdot\mathrm{h}}. \tag{8'}$$

For such a closed economy without a budget, the condition of aggregative equilibrium, in the sense that plans shall be fulfilled and expecta-

[19] Parts of this and the first section incorporate, in a revised form, most of the argument of "The Factor and Goods Markets" by Ralph Turvey and Hans Brems, *Economica* (Feb. 1951), XVIII, 57-68. Brems' contribution is to be found in Ch. 4 of his book *Reklame; Købelyst og Købeevne* (Copenhagen, 1950), and he has provided a restatement in his article "Ligevaegt, Forventninger og Planer: Makromodellen," *Nationaløk. Tids.* (1951), LXXXIX, 234-55.

[20] On the methodology of Swedish period analysis see Erik Lindahl, *Studies in the Theory of Money and Capital* (London, 1939), Part I and my chapter "Period Analysis" contributed to W. J. Baumol, *Economic Dynamics: An Introduction* (New York, 1951).

tions realised, is usually stated as the equality of prospective[21] Investment and Saving. The significance and limitations of this condition can only be fully understood by relating it to conditions in the goods market on the one hand and in the factor market on the other hand.[22]

Investment, Business Saving and Household Saving can be defined as follows:[23]

Investment ≡ Purchases of Capital Goods
+Purchases of Intermediate Goods for stock
+Output of all Goods } = market value of increase in Firms' stocks of
−all Sales of Goods } their own products

Business Saving ≡ Output of all Goods } = value added
−Purchases of Intermediate goods for production }
−Purchases of Factors } = all payments by Firms to Households, including dividends

Household Saving ≡ Sales of Factors
−Purchases of Consumption Goods

This gives:

Investment-Saving ≡ all Purchases of Goods
−all Sales of Goods
+Purchases of Factors
−Sales of Factors

Using the terminology of Bent Hansen who was the first to extend and apply this analysis,[24] this can be rewritten:

$$\text{Investment} - \text{Saving} \equiv \text{Goods Gap} + \text{Factor Gap}$$

These identities hold both prospectively and retrospectively. Prospectively a gap is the excess of the value of planned purchases over the value of expected sales. Retrospectively, since every actual purchase corresponds to an actual sale both gaps are of course zero and Investment is identically equal with Saving.

[21] *Prospective* is used to mean *ex ante,* planned, intended or expected; *retrospective to* mean *ex post,* realised or actual.

[22] The following paragraphs on this relationship are based on Grünbaum's "Inkongruente Forventninger og Begrebet Monetaer Ligevaegt," *Nationaløk Tids.* (1945), LXXXIII, 100-18, and part V of Tord Palander, "Om 'Stockholmkolans' Begrepp och Metoder," *Ekon. Tids.* (Mar. 1941), XLIII, 88-141, which will appear in English translation in no. 3 of *Internat. Econ. Papers.* See also E. Schneider, "Saving and Investment in a Closed Economy," *Internat. Econ. Papers* (1951), no. 1, pp. 84-103.

[23] Investment, Saving and Income are taken gross throughout.

[24] See his book *A Study in the Theory of Inflation* (London, 1951), which (*inter alia*) discusses the Factor and Goods markets and the Saving-Investment relation in conditions of suppressed inflation. He uses the word "commodity" where this article used the word "good."

Since equilibrium in the goods market requires a zero Goods Gap and equilibrium in the factor market requires a zero Factor Gap, it is evident that the equality of planned Investment and intended Saving is a necessary, but *not* sufficient condition of aggregative equilibrium in the sense of congruency of plans and expectations.[25]

Suppose, for example, that though prospective Saving and Investment are equal there is a positive Goods Gap and an (equal) negative Factor Gap. If all purchase plans are realised the actual results of the period will be that Firms have sold more than they expected, thus running down stocks, and Households have received a smaller Disposable Income than they expected. As a result, Firms will probably plan to increase their output in the next period and plan a corresponding increase in their Factor Purchase. Households, on the other hand, may lower their Factor Sale (income) expectations and plan a corresponding reduction in their Consumption expenditure. The following period, therefore, will almost certainly not be one of equilibrium; indeed, if the adjustments made by Firms and Households are sufficiently marked, there may be a negative Goods Gap and a positive Factor Gap: a reversal of conditions in the first period. Thus the initial prospective equality of Saving and Investment means very little.[26]

Again, suppose that expected Sales of both goods and factors are above their equilibrium levels and that there is an excess of prospective Saving over Investment. This situation is quite compatible with the existence of a positive Goods Gap if the (negative) Factor Gap is larger. If all purchase plans are realized, the result will be that Firms

[25] For other reasons why prospective equality may not indicate equilibrium see: F. A. Lutz "The Outcome of the Saving-Investment Discussion," American Economic Association, *Reading in Business Cycle Theory* (Philadelphia, 1944), pp. 141-42; Grünbaum, *op. cit.*, sec. 5.

[26] Alvin Hansen in his paper "The Robertsonian and Swedish Systems of Period Analysis," *Rev. Econ. Stat.* (Feb. 1950), XXXII, 24-29, argues that analysis in terms of planned Saving and Investment is inadequate because "income" may mean the income of consumers or the sales by entrepreneurs, but he fails to provide an adequate analysis in terms of the factor and goods markets. Instead, he states on page 28 that "The condition of equilibrium requires *both* that intended investment shall be equal to designed saving *and* that actual investment shall be equal to intended investment. Or what comes to the same thing, the condition of equilibrium requires *both* that intended investment shall be equal to actual investment and *also* that desired (or designed) saving shall be equal to actual saving." This is formally correct, but not very interesting since this condition only indicates, at the *end* of a period, whether there *has been* equilibrium instead of indicating at the *beginning* of a period whether there *will be* equilibrium—*i.e.*, whether plans and expectations are mutually consistent.

The same applies to Harold M. Somers' statement that "The equality of realized and planned saving is sufficient and necessary for an equilibrium of income over time" on page 534 of his "A Theory of Income Determination," *Jour. Pol. Econ.* (Dec. 1950), LVIII. His statement is a definitional relation, since if consumption plans are realised, unintended saving is identical with unexpected income.

sell more Goods than they had expected. Hence they may plan to expand output in the following period, even though a movement towards equilibrium would require a contraction of their output and Factor Purchase.

So far nothing has been said of the capital market;[27] that is, only those money flows have been mentioned whose recipients regard them as being on current account, and the rate of interest has implicitly been assumed to be kept constant by speculation or open-market operations. In order to bring the capital market into the analysis, suppose it to deal in "Securities," these being all things sold on capital account—bills, debentures, shares, real estate, second-hand furniture, etc. Now from Walras' Law, the demand for everything including money is equal to the supply of everything including money, at any arbitrary set of prices, prospectively as well as retrospectively:[28] *i.e.*,

Demand for Goods, Factors, Securities and Money ≡ Supply of Goods, Factors, Securities and Money

so:

Excess Demand for Goods, Factors and Money ≡ Excess Supply of Securities

which can be rewritten as:

Goods Gap + Factor Gap + Net Hoarding[29] − Credit Creation ≡ Excess Supply of Securities (9)

or:

Investment-Saving + Net Hoarding − Credit Creation ≡ Excess Supply of Securities (10)

In contrast to conditions in the factor and goods markets, it may be

[27] As H. G. Johnson complains in his note "The Matrix Multiplier and an Ambiguity in the Keynesian Concept of Saving," *Econ. Jour.* (Mar. 1952), LXII, 197-200.

[28] Compare Bent Hansen's similar presentation of these identities in his paper "Til Renteteorins Almindelige Oplaegning' in *Axel Nielsen: Til Minde* (Copenhagen, 1951). His follow-up is different, however.

J. R. Hicks, *Value and Capital* (Oxford, 1946), Ch. 14, note A, p. 183, says "the difference between planned saving and planned investment is the difference between the planned demand and planned supply for securities in general—including money"; but argues that because of the interdependence of the whole system the "relating of particular equations to particular prices becomes rather idle." This is true for the Hicksian "week"—what Lindahl (*op. cit.*, p. 66) calls the second equilibrium method—but not for the present analysis which uses the disequilibrium method for the factor and goods markets and the first equilibrium method (see *ibid* p. 65) and my chapter "Period Analysis" in Baumol, *op cit.* for the capital market.

[29] Defined as net increase in total money holdings of Firms and Households together.

assumed that in the capital market price is determined during the period by the demand and supply of securities which are thus brought into equality. The identity (10) just derived indicates that this implies that Investment and Saving together with Hoarding and Credit Creation must now be treated as schedules (with respect to the price of securities) instead of magnitudes.[30] Consequently the divergence between prospective and retrospective values of the variables can only be expressed with reference to the price of securities. For example, unintended Investment must now be understood as actual (retrospective) Investment minus the amount of investment planned at the security price determined during the period.

Since the price of securities equates the prospective demand and supply of securities, it can be seen:

1. From (10) that the schedules of Investment, Saving, Hoarding and Credit Creation can be said to determine the price of securities in each period. This is the loanable funds theory of the price of securities.

2. From (9) that, since the sum of the prospective values of: (a) The Goods Gap, (b) The Factor Gap, (c) Net Hoarding minus Credit Creation, is made zero through the working of the capital market, the condition of aggregative equilibrium can be stated as the requirement that any two of them shall be zero. It follows that neutral money (equality of prospective Net Hoarding and prospective Credit Creation) is not a sufficient condition for equilibrium.

3. From (9) that, if all purchase plans are realized and if actual Credit Creation equals its planned value,[31] the unintended Net Hoarding of Firms will equal their unexpected Sales (the Goods Gap) and the unintended Net Hoarding of Households will equal their unexpected income (the Factor Gap).

It has been assumed above that payment and purchase coincide—that there is no trade credit. If this assumption is relaxed, retrospective purchases of securities will exceed prospective purchases to the extent that Firms sell more goods and hence give more trade credit than they had expected. Allowance for this introduces considerable complications.

For the remainder of this paper the problems of the capital market will be ignored through the assumption that the price of securities is kept constant by open-market operations, so that Factor Purchase, Investment, etc., can be spoken of as magnitudes.

The objection raised here to analysis in terms of Saving and Investment is, of course, only an aspect of the aggregation problem. Just as a prospective equality of Saving and Investment may conceal a positive

[30] Unless their interest elasticity is zero.

[31] This will be the case if Credit Creation takes the form of the purchase of Securities

Goods Gap and an equal negative Factor Gap, so may a zero Goods Gap conceal a negative Trombone Gap and an equal positive Ear Plug Gap. The point of the division between the factor and goods markets is that this is the most useful of the possible single divisions, at least for short-run analysis. In particular, this division is essential in order to make clear the relationship between prospective and retrospective Saving and Investment during a multiplier process. In order to demonstrate this the following assumptions will be made:

1. All purchase plans are realised, so that divergence between prospective and retrospective magnitudes is entirely a matter of unexpected Sales.

2. The planned Consumption of any period is a function of the Factor Sale expected; similarly the planned Factor Purchase of any period is a function of the sum of the expected Sales of consumer goods and planned Investment.

3. The Sales, of goods or factors, expected for any period equal the actual Sales of the preceding period.

Assumptions (2) and (3) mean that aggregative equilibrium implies constancy of National Income and its components and they make the Swedish treatment in terms of expectations and plans equivalent to models which have a simple one-period lag in the behaviour equations.[32]

The dashed lines in Figure 3 show an initial equilibrium assumed to exist in Period 0. Investment is I, Consumption OV, National Income (their sum) is OZ and Factor Purchase (equals Factor Sale) is OX.

Now suppose that beginning in Period 1 some Firms increase their rate of purchase of capital goods so that planned Investment rises from I to I′ and remains at that level in subsequent periods. This means that the curve in the N.W. quadrant, which adds planned Investment to expected Sales of consumer goods, shifts leftwards by I′ − I. Since, by assumption (3) the increased purchases of capital goods is not anticipated, the increase in planned Investment creates a Goods Gap of SZ. Since planned Factor Purchase and expected Factor Sale are still both OX, this Goods Gap is equal to the excess of planned Investment over intended Saving. Retrospectively, the Goods Gap will be closed and Investment made equal to Saving by unintended disinvestment (unexpected Sales) of SZ on the part of the Firms selling capital goods.

In period 2 the Sales expectations of Firms will be increased by SZ. Since planned Investment[33] is assumed to remain at I′ and Consumption has not yet increased, the Goods Gap is zero. Planned production will

[32] Similarly, the assumption of correct expectations is equivalent to an unlagged behaviour equation.

[33] Stock replacement is thus neglected. L. A. Metzler, "The Nature and Stability of Inventory Cycles" (*Rev. Econ. Stat.* [Feb. 1941] XXIII, 13-29), includes it in part of his

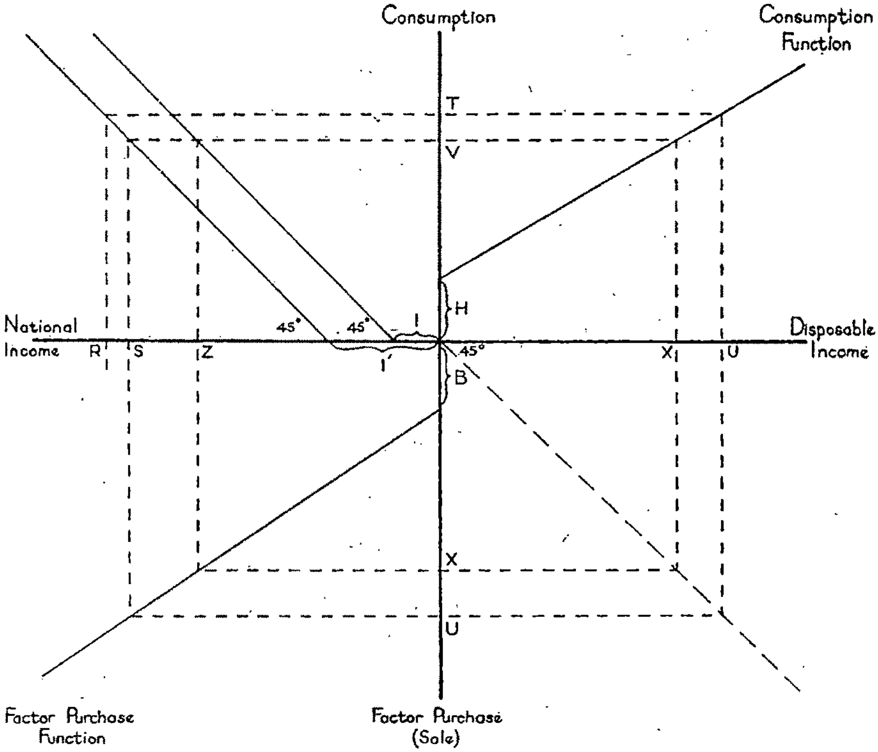

FIGURE 3

rise equally with expected Sales (by SZ) and planned Factor Purchase by b times this amount, that is by XU. Expected Factor Sales, however, are only OX (equal to actual Factor Sales in Period 1) so there is a Factor Gap of XU equal to the prospective excess of Investment over Saving. Retrospectively, the Factor Gap is closed and Saving raised to equal Investment by unexpected Factor Sales (Disposable Income) of XU, constituting unintended Saving.

Similarly in Period 3, the excess of Investment over Saving will be a matter of a Goods Gap of RS. Thus Period 3 is qualitatively the same as Period 1. This means that the income-generation period is two periods in length. What is the relationship between this and the customary statement[34] that the income-generation period is the sum of three lags: Income → Spending; Spending → Production; and Production → Income?

The answer is given by assumptions (2) and (3) above. As applied to Households they make the Income → Spending lag equal to the plan-revision period of Households, and as applied to Firms they make

[34] See Metzler's valuable paper "Three Lags in the Circular Flow of Income," *Income,*

the Spending → Production lag equal to the plan-revision period of firms.[35] The Production → Income lag has been ignored by the assumption that the Factor Purchase corresponding to the production of any period is made during that same period.

In either of two special cases, analysis of the multiplier process in terms of Saving and Investment is adequate:

1. Firms anticipate their Sales correctly so that the Goods Gap is always zero and the Factor Gap equals the prospective excess of Investment over Saving. Their retrospective equality is thus brought about entirely by unintended Household Saving.[36] This case may be called the Robertsonian multiplier, since the concept of Consumption depending on today's disposable income, which is the income earned yesterday, is equivalent to a one-period lag in the consumption function,[37] and Robertson does not distinguish planned and realised Investment.

2. Households anticipate their income (Factor Sales) correctly so that the Factor Gap is always zero and the Goods Gap equals the prospective excess of Investment over Saving. Their retrospective equality is thus brought about entirely by unintended Investment. This case may be called the Lundbergian multiplier.[38]

This treatment of the income-generation period as the sum of three simple lags is, of course, very abstract, even apart from the assumption that the plan-revision periods of all Firms and Households are of the same length and coincident. In particular, the Spending → Production lag can be treated as a simple lag only if all industry is fully integrated vertically.[39] While such complications destroy the simplicity of the two-sector model they do not, however, affect many of the conclusions reached with its aid. Thus a model with twenty goods markets would

[35] It is assumed here that the plan-revision periods of Firms and Households are of the same length.

[36] On the definitions used above there can be no unintended Business Saving if, as is assumed, all output and purchase plans are realised. A different assumption is made by Bent Hansen in his *A Study in the Theory of Inflation* (London, 1951), pp. 32-35.

[37] See Metzler's article on the three lags, *op. cit.*, pp. 17-18.

[38] Erik Lundberg, *Studies in the Theory of Economic Expansion* (London, 1937), Ch. 9, and Metzler's article on inventory cycles, *op. cit.* Both of these, however, bring in stock replacement in a later part of their analysis which is not the case in the present analysis, planned Investment being assumed constant. R. Eisner "The Invariant Multiplier," *Rev. Econ. Stud.* (1949-50), XVII (3), 198-202, points out that in this case National Income is always equal to actual Investment times the multiplier.

[39] Removal of this assumption requires a many-sector model. The necessary mathematics have been provided by Richard M. Goodwin, *op. cit.*, Richard Stone "Simple Transaction Models, Information and Computing," *Rev. Econ. Stud.* (1951-52), XIX (2), 67-84 and John S. Chipman, *op. cit.* The latter introduces an ingenious way of allowing for lags of different length.

The economics of the Spending → Production lag are excellently discussed by Gardner Ackley in section 2 of his article "The Multiplier Time Period," *Am. Econ. Rev.* (June 1951), XLI, 350-68.

have twenty Goods Gaps and twenty kinds of possible unintended Investment, but it would still be true that the latter arises from mutual inconsistency of plans and expectations concerning the production, sale and purchase of goods.

In conclusion, it is worth examining the belief that the income-generation period is equal to the reciprocal of the velocity of circulation of active money.[40] This belief is not true, whether the lags composing the income-generation period be simple lags or weighted averages, for the following reasons:

1. The plan-revision period of Firms and Households need not equal the length of time for which they hold active money balances. For example if a Household receives its income at the beginning of a period and disburses it evenly through the period, it holds money on the average for only half a period.

2. Money received on current account and used to finance Imports or security purchase will later be used to finance Exports or Investment. The speed of this will affect income-velocity but not the income-generation period.

3. Increased dealings in the capital market on capital account will increase active balances (or raise their speed of turnover) without affecting the income-generation period.[41]

4. If there is trade credit so that payment follows purchase "the speed of the flow of the new money is seen to depend on the rate at which an added flow of new goods is forthcoming, and there exists no logical reason for supposing that the rate at which production increases will bear any connection with any pre-existing speed of money flows."[42] Thus the marginal income-generation period may be very different from the average and any calculable income velocity is relevant, if at all, only to the latter.

[40] Fritz Machlup maintained this in his paper "Period Analysis and Multiplier Theory," American Economic Association, *Readings in Business Cycle Theory* (Philadelphia, 1944) where he defined this reciprocal as "the period in which total incomes are equal to the total of active balances" this being "the time which it takes the money in active circulation to complete a circuit flow from income recipient to income recipient" (p. 208). This is "Income Period E." He made a number of reservations, however, some of which are elaborated below.

Some of the following points were made earlier in my article "The Multiplier," *Economica* (Nov. 1948), XV, 267.

[41] Some authors beg these last two points by explicitly ignoring "the financial circulation" which they fail to define adequately.

Machlup states that "An increase in transactions arising from the transfer of assets might lengthen the income period; an increase in the use of money substitutes and of clearing arrangements might shorten the income period. The effects on the propagation speed of the new income flow may be considerable (*op. cit.*, p. 215). This simply assumes equality of the two periods.

[42] Ackley, *op. cit.*, p. 352.

COMPARABILITY OF LABOR CAPACITIES OF FARM AND NONFARM LABOR*

By D. GALE JOHNSON

> When watching the action of demand and supply with regard to a material commodity, we are constantly met by the difficulty that two things which are being sold under the same name in the same market are really not of the same quality and not of the same value to the purchasers. Or, if the things are really alike, they may be sold even in the face of the keenest competition at prices which are nominally different, because the conditions of sale are not the same. . . . But difficulties of this kind are much greater in the case of labour than of material commodities: the true price that is paid for labour often differs widely, and in ways that are not easily traced, from that which is nominally paid.[1]

In the above paragraph and his later discussion, Marshall indicates that wage rates or money earnings, by themselves, provide an inadequate picture of the functioning of the labor market because the laborers being compared are not of equal efficiency or the conditions of sale of labor are dissimilar. Any analysis of the functioning of the farm labor market is beset by difficulties of both kinds. This is especially true if one wishes to determine whether the labor market has tended to equalize the returns to farm and nonfarm labor. In this paper only the first of the two main problems is considered—the general question of the efficiency of the farm work force compared to the nonfarm work force.

Because the word "efficiency" has so many different connotations, the term "labor capacity" is used in its place. Our measure of the labor capacity of the farm labor force is the job distribution that a random sample of the farm labor force would have in nonfarm employment if each worker held the job which for him had the greatest net advantage. This measure is subject to two restrictions: it relates to a given time

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[1] Alfred Marshall, *Principles of Economics* (London, 1936) 8th ed., pp. 546-47.

and it assumes that farm migrants find jobs in competition with the nonfarm labor force, as it actually exists at the time, in a given labor market. The measure of relative labor capacity that can be determined is ratio of the average money earnings reflected by the (hypothetical) nonfarm job distribution of farm labor force to the average money earnings of the nonfarm work force. The measure assumes that farm people have the same set of attitudes concerning the nonmonetary advantages and disadvantages of nonfarm jobs as do nonfarm people.[2]

This study attempts to determine the relative labor capacity of farm people by analysis of the job experience of farm persons who have migrated to nonfarm areas. The materials have come largely from the 1940 Census of Population and cover persons who migrated from farms between January 1, 1935 and the time the 1940 Census was taken.[3] The general approach has been to estimate the money earnings reflected by the farm-nonfarm migrant population, standardized to eliminate the effects of age, sex and color differences relative to the parent farm population, and to compare this estimate to the labor earnings of the nonfarm population. The conclusions reached later are based upon two significant hypotheses: (1) The migrants from farm areas are representative of the parent population in all significant characteristics, excepting age, sex and color. (2) The actual job experience of farm migrants in nonfarm areas is indicative of the labor capacity of farm migrants. This implies that recent migrants from farms are able to find the jobs for which they are best suited under given labor market conditions.

It has not been possible to find evidence that would support or reject the second hypothesis. It seems probable that the first job held by many migrants is not the one best suited to his particular labor capacities. The average time the farm migrants had been in nonfarm communities was approximately two and one-half years. Consequently, the majority of them had had an opportunity to search for different jobs, though an important fraction had not. It is quite possible therefore that the dependence of the analysis upon this hypothesis has had the effect of a slight underestimation of the labor capacity of farm people.

[2] Reference is made only to the labor capacity of farm people as evidenced by the nonfarm jobs they might hold and not also to the farm jobs nonfarm people might hold. This has been done because the net transfer of labor in the United States has been from farm to nonfarm and the relevant comparison is the one chosen.

[3] A migrant was defined as a person who lived in 1935 in a county or city of 100,000 or over, different from the one in which he lived at the time the 1940 Census was taken. Thus not all persons who changed from a farm to a nonfarm residence between 1935 and 1940 were counted as migrants if the move was within a county and not to a city larger than 100,000.

I. *Selectivity of Rural Migration*

Migration from farm to nonfarm communities is a selective process with respect to certain population characteristics. The migrants included in the present study were younger than the parent population.[4] The migrant stream included slightly fewer males[5] and significantly fewer nonwhites than the rural farm population of 1940.[6]

Selectivity of migration with respect to age, sex and color is of little significance in the present instance. The effects of these types of selectivity can be reflected in our estimates of labor capacity. Migration, however, may be selective with respect to other characteristics that are related to labor capacity, such as intelligence, manual dexterity and education. The hypothesis that the farm migrants to nonfarm areas represent a random sample of the parent farm population with respect to characteristics other than age, sex and color is not rejected by three different types of evidence that bear on the issue.

1. The median number of years of school completed by farm migrants 25 to 34 years old was almost identical to that of the farm population of the same age—about 8 years of schooling. About 11.5 per cent of the migrants had some college education compared to 8.8 of the rural farm population. Almost the same proportion graduated from college (4.3 and 3.8 per cent). It does not appear that the farm migrants were appreciably better educated than the farm nonmigrants.[7]

2. If there is a positive relation between the labor capacity of farm migrants and the level of farm income in their original community, the distribution of farm migrants by the region of origin does not indicate that the farm migrants came predominantly from either the high or low farm income regions. An analysis of the data on net off-farm migration rates by states for the decade of the 'thirties as a whole revealed a weighted correlation of −0.38 between the level of net farm income per worker and the rate of migration from farms. The correlation coefficient, which is just significant at the one per cent level, indicates that the low income states had a somewhat higher rate of net off-farm

[4] The white farm migrants to nonfarm areas had a median age about 10 years lower than the white farm nonmigrants if only persons over 14 are included. The nonwhite median for migrants was about 4 years lower than for the nonwhite farm nonmigrants. See Sixteenth Census of the U.S., 1940, *Population, Internal Migration, 1935 to 1940, Age of Migrants,* Table 9.

[5] See Sixteenth Census, *Population, Internal Migration, Social Characteristics of Migrants,* Table 2.

[6] See Sixteenth Census, *Population, Internal Migration, Color and Sex of Migrants,* Table 2. The nonwhite farm population was 16.2 per cent of the total farm population in 1940; only 12.2 per cent of the farm migrants to nonfarm communities were nonwhites.

[7] Sixteenth Census, *Population, Internal Migration, Social Characteristics of Migrants,* Table 7.

migration than the higher income states. However, it should be noted that for the particular group of migrants included in our data, the regional distribution of the origin of migrants did not indicate any relationship between the level of farm incomes and the rate of migration.

3. There have been several score of studies made for individual communities in an attempt to determine if migrants represent a selected group from the parent population that is in some way superior or inferior. These studies, made by sociologists, have used various definitions of superiority or inferiority, but most of the research workers had in mind a concept that had a significant relation to economic productivity. In a review and analysis of this literature, Dorothy S. Thomas found four conflicting hypotheses: (1) Cityward migration selected the superior elements of the parent population; (2) Cityward migration selects the inferior elements; (3) Cityward migration selects from the extremes; and (4) Cityward migration represents a random sample of the parent population. She concludes as follows: "We have, then, evidence of a sort that migration selects the better elements, the worse elements, both the better and the worse, and also that it is unselective. Even though we may decide that the evidence cited is tenuous, it is not improbable that selection does operate positively, negatively, and randomly, at different times, depending on a variety of factors that, up to the present, have not been adequately investigated."[8]

Sorokin and Zimmerman arrived at the following conclusions from an analysis of the literature: "There is no valid evidence that migration to the cities is selective in the sense that the cities attract in a much greater proportion those from the country who are better physically, vitally, mentally, morally, or socially, and leave in the country those who are poorer in all these respects [italics omitted]. There is also no evidence that the reverse is true."[9]

Though I have not been able to provide evidence denying the possibility of selectivity in the migration process, it is significant that the hypothesis that no important degree of selectivity exists cannot be rejected on the basis of available data. Consequently, in this paper it is assumed that there is no selectivity.

II. *Occupational Experience of Rural Farm Migrants to Nonfarm Areas*

The published data from the 1940 Census of Population do not provide estimates of the wage and salary incomes of farm migrants to nonfarm areas. The published data indicate the employment status of the

[8] Dorothy S. Thomas, "Selective Migration," *The Milbank Memorial Fund Quart.*, 1938, XVI, 403-07.

[9] Sorokin, P. and Zimmerman, C. C., *Principles of Rural-Urban Sociology* (New York, Henry Holt and Co., 1929), p. 582.

migrants and the occupational category of the employed migrants. On the basis of certain assumptions, which are indicated below, these data are translated into an estimate of annual labor earnings of the migrant group.

Recently the Bureau of the Census tabulated data on the wage and salary incomes of farm migrants to urban areas for samples of migrants from the Corn Belt and from the Cotton Belt. The wage and salary incomes relate to 1939; consequently, some of the migrants were still living and working in farm areas during part or all of 1939. Thus the wage and salary data cannot be used directly but required adjustment to reflect the effect of lower money incomes on farms as well as for the more obvious adjustments for age. In this section, I will present the results obtained from the published data and later show the degree of consistency between the two sets of estimates.

A. *Incidence of Unemployment*

These data, summarized in Table I, indicate that rural farm migrants to urban areas had almost identically the same employment status as the urban population. Of those classified as members of the labor force, 84.4 per cent of the farm migrants were employed while 84.7 per cent of the labor force members resident in urban areas were employed.[10] Some difference does exist in the case of migrants to rural nonfarm areas. Roughly 3 per cent fewer migrants than nonmigrants were employed.[11]

Corroborating data are provided by a Census sample survey of the employment experience of migrants in 1948. These data cover migrations of one-year duration or less. In this case migrants had rather different rates of unemployment than the nonmigrants. However, the male migrants from farm to nonfarm areas had roughly the same proportion of unemployment (9.2 per cent) as the migrants from nonfarm to nonfarm areas (8.1 per cent).[12] These rates of unemployment were much higher than for the total male population, which was 3.6 per cent. The higher rate of unemployment among the migrants was probably due to the relatively short time interval considered.

[10] No difference remains when the employment data are adjusted for the differences in age distribution.

[11] Farm migrants to farm areas had the same employment status as the total farm population.

[12] Bureau of the Census, *Current Population Reports, Labor Force*, Series P-50, No. 10, Table 4. The two figures could have been drawn from the same populations. (See *ibid.*, p. 5.)

TABLE I.—DISTRIBUTION OF RURAL FARM MIGRANTS AND TOTAL POPULATION IN THE LABOR FORCE IN URBAN AND RURAL NONFARM AREAS BY EMPLOYMENT STATUS, 1940, FOR U.S.*
(Per cent)

	Both Sexes			Males		
	Em.[a]	S.W.[a]	E.W.[a]	Em.	S.W.	E.W.
Rural Farm Migrants by Destination						
Urban	84.4	11.2	4.4	81.1	13.4	5.5
Rural Nonfarm	79.6	12.9	7.5	77.9	13.7	8.4
Rural Farm	91.4	5.3	3.3	91.7	4.9	3.4
Total Population						
Urban	84.7	11.0	4.3	81.4	13.8	4.8
Rural Nonfarm	82.2	10.6	7.2	81.0	11.1	7.9
Rural Farm	91.7	4.4	3.9	92.1	4.0	3.9

[a] Em=Employed; S.W.=Seeking Work; and E.W.=Emergency Work.
* Source: Sixteenth Census, *Population, Internal Migration, 1935 to 1940, Economic Characteristics of Migrants*, Tables 2 and 8. Data relate to individuals 14 years or older.

B. *Occupational Distribution of Employed Migrants*

The previous section indicated that farm migrants to nonfarm areas found employment as readily as nonmigrants, if a certain time for adjustment was allowed. The question to which we now turn is the nature of the jobs which the farm migrants obtained.

Table II compares the occupational distribution for employed male and female migrants to urban and rural nonfarm areas with the occupational distribution of the nonmigrants. In the table, the occupational groups are ranked according to the medium wage or salary income of male workers employed for 12 months in 1939.[18]

It will be noted that the farm migrants to urban areas are not as fully represented in the higher income groups as the urban nonmigrants are. In the top four groups, which contain 56.4 per cent of the nonmigrants, are found only 38.0 per cent of the farm migrants and much the same situation prevails in the rural nonfarm areas—45.0 per cent of the nonmigrants fall in the top four groups while only 28.1 per cent of the farm migrants do. Comparison of female farm migrants and nonmigrants shows much the same thing.

The importance of the differences in the occupational distribution of the migrants and nonmigrants depends upon the differences in the wages in the various occupational groups. If the wage differences were substantial, one would expect the occupational distribution of the farm

[18] There are only minor differences between the ranks of wages and salaries for males and females. (See Table III.)

TABLE II.—PERCENTAGE DISTRIBUTION AMONG MAJOR OCCUPATION GROUPS OF EMPLOYED FARM MIGRANTS AND NONMIGRANTS, BY SEX, IN URBAN AND RURAL NONFARM AREAS IN 1940

	Male		Female	
	Non-migrants (per cent)	Farm Migrants (per cent)	Non-migrants (per cent)	Farm Migrants (per cent)
Urban				
Proprietors, Managers and Officials	12.4	5.4	3.7	1.4
Professional and Semiprofessional	6.5	3.9	11.2	13.7
Clerical and Sales	18.4	12.7	33.5	16.8
Craftsmen and Foremen	19.1	16.0	1.2	0.4
Operatives	22.8	26.4	21.2	13.0
Service Workers	8.9	12.7	11.6	17.1
Laborers	10.5	16.9	1.9	1.4
Domestic Service	0.5	0.8	5.4	35.5
Farmers and Farm Managers	0.6	3.9	0.1	0.1
Farm Laborers and Foremen	0.4	1.1	0.1	0.6
Total	100.1	99.8	99.9	100.0
Rural Nonfarm				
Proprietors, Managers and Officials	12.8	6.9	6.1	3.1
Professional and Semiprofessional	4.7	4.0	13.2	18.9
Clerical and Sales	9.9	5.1	21.8	9.7
Craftsmen and Foremen	17.6	12.1	0.8	0.3
Operatives	25.6	22.3	20.1	13.2
Service Workers	5.1	14.3	11.2	17.0
Laborers	15.3	18.1	2.9	2.2
Domestic Service	0.6	0.6	22.4	32.7
Farmers and Farm Managers	2.4	2.1	0.3	0.1
Farm Laborers and Foremen	6.0	14.2	1.3	2.9
Total	100.0	99.6	100.1	100.1

* Source: Sixteenth Census, *Population, Internal Migration, Economic Characteristics of Migrants,* Table 10.

migrants to reflect substantially lower income than the occupational distribution of nonmigrants. One way of determining the extent of the difference is to weight the occupational distribution by the median incomes actually received in each occupation. The census provides information on the money income from the receipt of wages and salaries. Any nonmoney income such as the perquisites to farm laborers and domestic servants is not given. The income of self-employed persons is also excluded. Likewise data are available only for the United States as a whole and not for urban and rural nonfarm areas. Of the three main limitations of the data, only the first—failure to include nonmoney wage or salary income—is important. Since relatively few urban work-

TABLE III.—INCOME REFLECTED BY OCCUPATIONAL DISTRIBUTION OF EMPLOYED FARM MIGRANTS AND NONMIGRANTS IN URBAN AND RURAL NONFARM AREAS, BY SEX, 1939

Residence in 1940 and Sex	Farm Migrants (dollars per year)	Nonmigrants (dollars per year)	Per Cent Migrants of Nonmigrants
Urban			
Male	1075	1260	85
Female	560	700	83
Rural Nonfarm			
Male	960	1160	83
Female	590	660	89

Based on data in Table II and data below.
Median annual wage and salary incomes by occupational groups were as follows:

	Male	*Female*
Proprietors, Managers, and Officials	$2,136	$1,107
Professional and Semiprofessional	1,809	1,023
Clerical and Sales	1,359	883
Craftsmen and Foremen	1,309	827
Operatives	1,007	582
Service, except Domestic	833	491
Laborers, except Farm	673	538
Domestic Service	429	296
Farmers and Farm Managers	373	348
Farm Laborers	309	76

* Source: Sixteenth Census, *Population*, Vol. III, *Labor Force*, Part I, Table 72. In calculating medians, incomes of less than $100 were not included to exclude most unpaid family workers. Comparisons do not entirely eliminate effects of age.

ers fall in the self-employed category, failure to include income from that source is unimportant.[14]

The results of these calculations are presented in Table III. They show that the income reflected by the occupational distribution of the rural farm migrants, had they received the median income of each occupational group, would have been somewhat less than the income reflected by the occupational distribution of urban and rural nonfarm nonmigrants. The differences are of the magnitude of 11 to 17 per cent less.

Are these differences due solely to the different innate capacities of the groups being compared? One obvious source of difference is age.

[14] Out of a total of 40,450,000 male workers in 1948, something less than 4,000,000 were self-employed in pursuits other than agriculture. The earnings of the self-employed professional workers in 1947 who were about one-third as numerous as the salaried professional workers, were about 40 per cent greater than the income of salaried professionals. However, most of the self-employed were in the proprietors, managers, and officials group and the self-employed earned about a sixth less than the salaried. See Bureau of the Census, *Current Population Reports*, Series P-60, No. 5, Table 17.

The farm migrants are younger than the nonmigrants in the areas to which the farm migrant went. Farm migrants to nonfarm areas fall into age brackets that earn less than the average of either the parent or the absorbing population.

The calculations given in Table III eliminate the effect of age upon the level of earnings within an occupational group. An adjustment of the data to include the effects of age upon the occupational distribution of a population can be made by comparing the occupational distribution of nonfarm people of the same age distribution as the farm migrants with the actual occupational distribution of nonfarm people.

Such an analysis cannot be made directly from the data at hand. Census data are available showing the occupational distribution by age only for the country as a whole and not for nonfarm groups. This distribution was adjusted by omitting farmers and farm managers and farm laborers. The Census data gave the age distribution of farm persons migrating to urban areas, but not all such migrants were in the labor force. It was assumed, since the proportion of the migrants that was in the labor force was roughly the same as for urban nonmigrants, that for any age group labor force participation was the same for rural farm migrants and urban nonmigrants.

When these adjustments were made, it indicated that the income reflected by the actual age distribution of the male farm migrants was $1,230 while the male urban nonmigrants, excluding farmers and farm laborers, had an average of $1,270.[15] This would indicate a difference of roughly $40 due to occupational differences associated with the age distribution of farm migrants. If this adjustment is applied to the data in Table III, it would mean that the male farm migrants to urban areas would earn on the average about 11 per cent less than male urban nonmigrants. This would be an income level roughly equal to the average incomes of (1) operatives and (2) craftsmen and foremen.

All of the above calculations on wage earnings relate, of course, to the given set of relative wage incomes by occupational groups. A different set of relative wages combined with either the same or different occupational distribution of migrants and nonmigrants would result in a different comparison of labor earning possibilities.

Data on wage or salary incomes by occupational groups comparable to the data used in the previous analysis are available for 1950.[16] A comparison of the changes in wage or salary incomes by occupational groups indicates that the groups in which farm migrants are concen-

[15] See Sixteenth Census, *Population*, Vol. III, *Labor Force*, Part 1, Table 65, for occupational distribution by age.

[16] See Bureau of the Census, *Current Population Reports, Consumer Incomes*, Series P-60, No. 9, Table 25.

trated to a greater degree than the urban population had the greatest relative rise in earnings. This change in relative wage rates had the effect of reducing the differential between the earnings value (before adjustment for the effect of age on occupational distribution) of male urban nonmigrant and the farm migrants occupational distribution from 15 per cent to 10 per cent. After adjustment for the effects of age, the earnings of male farm migrants were about 8 per cent less than the male urban nonmigrant.[17]

The conclusion that one might draw from this analysis is that labor employed in agriculture, on the average, has a labor income capacity of roughly 90 per cent of the labor income capacity of our urban and rural nonfarm populations, for similar age and sex distributions.

This estimate is for the nation as a whole. The migrants from different regions may have fared rather differently. The next section analyzes the experience of migrants by region of origin.

TABLE IV.—INCOME REFLECTED BY OCCUPATIONAL DISTRIBUTION OF FARM MIGRANTS TO URBAN AND RURAL NONFARM AREAS CLASSIFIED BY REGION OF ORIGIN AND SEX, 1939*

Residence in 1940 and Sex	Region of Origin			
	Northeast	North Central	South	West
Urban				
Male	1125	1120	1030	1280
Female	620	590	555	650
Rural Nonfarm				
Male	960	1035	910	980
Female	575	640	545	670

* Source and method of calculation: see Table III. The income reflected by the occupational distribution of nonmigrants for urban areas was $1,260 for males and $700 for females and for rural nonfarm areas was $1,160 for males and $660 for females.

III. *Occupational Experience of Farm Migrants from Different Regions*

The farm migrants from different regions to nonfarm areas did not achieve the same occupational distributions. Table IV shows the earning value of the occupational distributions of the migrants from the four regions to urban and rural nonfarm areas. The West farm migrants to urban areas had the highest earning value, while the South farm migrants had the lowest when the migrants went to urban areas. The North Central farm migrants did the best of migrants to rural nonfarm areas while the South farm migrants did the least well.

[17] Calculations for migrants to rural nonfarm areas indicate a difference of 10 per cent at the 1950 relative wage levels.

The relatively poor showing of the South seems to be due to the color composition of the South migrants. The published Census data did not give separate data for the occupational distribution of whites and nonwhites. However, a special tabulation of data from the 1940 Census of Population permits a comparison of the occupational distribution of male white farm migrants to urban areas for the Cotton Belt and the Corn Belt.[18] A calculation of the income value reflected by the occupational distributions was the same as for the Corn Belt.[19]

Consequently, if the occupational distributions accurately reflect the capacity of the farm migrants and thus of the farm population, it may be concluded that the labor capacity of the white farm labor force in the South is approximately the same as in the rest of the nation. This conclusion is somewhat surprising in light of the significant differences that exist between agricultural labor earnings in the South and in the rest of the nation.[20] The writer considered the possibility that the farm migrants in the South came in disproportionate numbers from the rural areas with the highest farm incomes. This might then explain the relative ease with which Southern farm people fit into the nonfarm occupation pattern.

The hypothesis does not appear to be valid, however. Though data are not available to show the origin of white farm migrants by small

[18] For a description of the sample, see Section IV below.

[19] Though the Cotton Belt does not include all of the South and the Corn Belt does not include all of the North Central States, the income value reflected by the farm migrants in the Cotton Belt farm (both white and nonwhite) migrants differed from that of the South as a whole by less than one per cent, while the difference between the Corn Belt and the North Central States was about three per cent. This indicates that the samples were quite representative of the larger areas. These calculations and those referred to in the text assume that the rates of pay in the same occupational groups were identical in all regions. The validity and significance of this assumption is discussed in Section IV.

[20] For the years 1940 and 1945, the writer has estimated that annual labor returns to farm workers were as follows (in dollars):

Region	*1940*	*1945*
United States	$385	$1,135
New England	505	1,090
Middle Atlantic	565	1,105
E. N. Central	505	1,455
W. N. Central	500	1,745
S. Atlantic	260	710
E. S. Central	260	540
W. S. Central	315	760
Mountain	505	1,560
Pacific	530	2,202

These data relate to all labor in the South. Adjustments based on the relationship between the value of products sold, traded or used on farms of white farm operators and all farm operators in the South, result in estimates of labor income for white farm labor 10 to 12 per cent higher than those given above. Since some Negro labor is used on farms operated by white operators, there is a small, but undertermined, downward bias in the estimates of white farm labor income in the South.

areas, such as counties, data on all farm migrants indicate that the rate of migration is as high, if not higher, from counties with the lowest levels of living as it is from counties with the highest levels of living.[21]

IV. *Wage or Salary Income of Farm Migrants to Urban Areas*

Because wage and salary data were not available for all farm to urban migrants, it was necessary to derive an estimated level of earnings from their occupational distribution. This estimate was based on the assumption that the median earnings of the migrant were the same as the median earnings for the occupational group involved. Through the cooperation of the Bureau of the Census, it has been possible to obtain the wage and salary data for 9,500 migrants from the Corn Belt, 8,900 white and 4,000 nonwhite migrants from the Cotton Belt to urban areas.[22]

The wage or salary data for the sample of migrants cannot be directly compared with the data provided in the Census for any urban group. First, the wage or salary income is for the year 1939 and at least 24 per cent of the individuals included in the sample resided on farms part or all of 1939. Thus, the income data do not indicate directly the income of the farm migrants in urban occupations. Most of the individuals who lived on farms some part of 1939 either would not have had any wage or salary income while living on farms because they were farm operators or unpaid family workers or would have worked as farm laborers at a lower level of money income than the average urban wage or salary level. Second, the age distribution of migrants is substantially different from that of urban nonmigrants. Despite these two difficulties, the availability of these data provide an opportunity to check the general validity of the assumptions involved in the earlier analysis.

The migration period covered in the Census questionnaire was from April 1, 1935 to the time the Census enumeration was actually made,

[21] The countries in the 16 states of the South were divided into quartiles according to the rural farm level of living index developed by Hagood. The average (unweighted) migration rates for the counties in each quartile were calculated for 1930-40 decade. The quartiles had the following average rural level of living indexes: 1st, 108; 2nd, 85; 3rd, 74; and 4th, 60.6. The average migration rates were: 1st, minus 13.1; 2nd, minus 13.1; 3rd, minus 15.4; and 4th, minus 13.2. Source of data: as to levels of living: Margaret Jarman Hagood, "Rural Level of Living Indexes for Counties of the United States, 1940" (Washington, 1943); and as to migration: Eleanor H. Bernert, "County Variation in Net Migration from the Rural Farm Population, 1930-40" (Washington, 1944).

[22] These data were obtained jointly by the Scripps Foundation for Research in Population Problems of Miami University, the Bureau of Agricultural Economics of the United States Department of Agriculture, and Agricultural Economics Research of the University of Chicago. Mr. and Mrs. Donald J. Bogue contributed substantial amounts of their time and energy to the study. It should be noted that the sample included only migrants that remained within the same state.

which was subsequent to April 1, 1940. Thus persons who migrated within an approximate 15-month period following January 1, 1939 would have spent some time on farms during 1939. On the basis of Bureau of Agricultural Economics estimates of departures from farm to nonfarm areas, and assuming that there was no greater memory bias for migrants leaving farms from 1935 through 1938 compared to migrants after that date, 24 per cent of the migrants lived part or all of the year 1939 on farms. The wage or salary income of male farm residents in 1939 was substantially below that of urban residents. In fact, for employed male farm residents without other income, but with $1 or more of income, it was $369; for the employed male urban resident, the median was $1,188.[23] Further, 30.5 per cent of the employed male farm residents without other income had no money income and presumably were unpaid family workers, while only 5.6 per cent of the urban group fell into this category. It is reasonable to assume that the male farm migrant would not have had money wage or salary earnings during the period of residence on farms in 1939 greater than 30 per cent of the amount he did or would have earned in an urban area. Consequently, I have assumed that the median earnings of the farm to urban migrants should be increased by a minimum of 10 per cent to adjust for the factor discussed here.[24]

The adjustment for the difference in age distribution was made by estimating the level of wage or salary income employed urban residents would have had if their age distribution had been the same as that of the farm migrants. This estimate was then subtracted from the earnings level reflected by the actual age distribution of the employed urban residents. The results of these adjustments are indicated in Table V.

Table V also provides a comparison between the adjusted wage or

[23] Sixteenth Census, *Population, The Labor Force (Sample Statistics)*, Wage or Salary Income in 1939, Table 10a.

[24] The method of arriving at this estimate may be indicated briefly. As noted in the text, 24 per cent of the migrants lived on farms part or all of 1939. If the movement occurred at the same rate during the 15 months through March, 1940, a fifth of this group of migrants would have lived all of 1939 on farms, while of the remaining four-fifths their average experience would have been a half year of work on farms and a half year of work (or seeking work) in urban areas. Thus taking the urban wage as one and the farm resident's salary or wage income as three-tenths, the following weighted average for all migrants is obtained:

$$\begin{array}{lcl} 0.76 \times 1.00 + & = & 0.760 \\ 0.048 \times 0.30 & = & 0.014 \\ 0.192 \times 0.65 & = & 0.124 \\ \hline & & 0.898 \end{array}$$

This average indicates that the actual wage or salary income of the migrant should be increased by about 11 per cent to adjust for the inclusion of income earned while a farm resident.

TABLE V.—MEDIAN ANNUAL WAGE OR SALARY INCOME OF EMPLOYED MALE RURAL FARM MIGRANTS TO URBAN AREAS AND OF EMPLOYED MALE URBAN RESIDENTS, AND ADJUSTMENTS FOR RESIDENCE AND AGE, CORN BELT AND COTTON BELT, 1939

Area and Color	Migrants' Median Wage or Salary Income[a] (dollars)	Residence Adjustment[b]	Age Adjustment[c]	Migrants' Adjusted Income (dollars)	Urban Median Wage or Salary Income[d]	Income Ratio: Migrants to Urban
Corn Belt, White	954	95	126	1,175	1,218	0.96
Cotton Belt						
South, White	690	69	122	881	1,010	0.87
North, White	708	71	134	913	1,040	0.88
South, Nonwhite	412	41	30	483	465	1.04
North, Nonwhite	404	40	50	494	465	1.06

[a] From special tabulations of Census data. Includes all employed workers on private or non-emergency government work in late March 1940, including those with no wage or salary income, but excludes any worker who had $50 or more of income from sources other than wages or salaries. The two standard deviation confidence limits for the sample medians, given in the same order as in the table are: 940–968, 670–710, 693–723, 394–430 and 386–422.

[b] An adjustment of 10 per cent applied.

[c] The age adjustment reflects the difference between the wage or salary level of the distribution of the employed migrants and of the employed urban residents evaluated at the level of earnings by age for the urban residents. For the white migrants, the age distribution and earnings levels by age were those for employed male urban residents for the United States as a whole. Source: Sixteenth Census, *Population, The Labor Force (Sample Statistics), Wage or Salary Income in 1939*, Table 6. For the nonwhite data from Sixteenth Census, *Population, Education, Educational Attainment by Economic Characteristics and Marital Status*, Tables 20 and 35, were used after minor adjustment.

[d] For wage or salary workers without other income on private and nonemergency government work. Median calculated for employed persons including those with no wage or salary income in 1939. For Corn Belt the income figure used is for the North Central States. (Sixteenth Census, *Wage or Salary Income in 1939*, Table 5). For the Cotton Belt, nonwhite, the South as defined by the Census is used (*ibid.*, Table I). The median wage and salary incomes for the two Cotton Belt areas were not available from the Census and it was necessary to estimate the medians. The median of $1,050 for white male employees for the South as a whole was reduced, in each of the two cases, by the percentage that the median family income for white wage or salary workers' families, in the states included in the Cotton Belt area, was below the similar median for the South as a whole. (See Sixteenth Census, *Population and Housing, Families, General Characteristics*, Tables 34 and 45.)

salary medians for the employed male farm migrants and the medians for urban employed workers. The results are, I believe, quite consistent with the estimate of a 10 per cent difference derived for the United States as a whole on the basis of the occupational distributions. Some of the variation in the ratios of the incomes are undoubtedly due to sampling variation. For example, the occupational distribution of the sample of Corn Belt migrants reflected an earnings value of about 3 per cent more than for all the farm to urban migrants from the North Central States. However, the combined occupational distribution for

all Cotton Belt migrants was virtually identical with that for the South as a whole.

The results are, I believe, reasonably consistent with the estimate of a 10 per cent difference in the labor capacities of the farm and nonfarm labor forces for the United States. The high relative incomes of nonwhite migrants in the Cotton Belt offset the somewhat lower relative incomes for whites in the same region. These data support one of the assumptions underlying the analysis of the occupational distributions, namely, that the farm migrants in any occupational group had the same median level of earnings as the urban resident in the same occupational group (after adjustment for age and sex). If this assumption were not valid, the relative money incomes derived from wage data would have been substantially below 90 per cent since the occupational distributions in our area samples were very similar to those for the regions that included the samples.

The data on money wages or salaries seem inconsistent with our earlier results at one point, namely, that the white labor forces in the Corn Belt and the Cotton Belt had the same labor capacities. This conclusion was based on the comparison of the occupational distribution, assuming that the levels of earnings by occupational groups were the same in the two areas. The data given in Table V on urban wage or salary incomes indicate that this assumption is not valid since the occupational distribution of nonfarm white workers in the South is nearly the same as for white workers in the nation as a whole.[25] Does the difference in the earnings of the urban residents in the South and in the North Central States reflect differences in the labor capacities of the nonfarm labor forces of the two regions? Though I cannot justify my conclusion in the space available to me, I would answer the question in the negative. Some of the difference can be explained in terms of the distribution of workers by size of community and size of plants in which workers are employed. Much of the remainder was due to the demand and supply relations in the labor market in the South compared to the rest of the nation. There is some evidence that there was a fairly substantial reduction in the labor-earnings differential between the South and the rest of the country from the late 'thirties to the late 'forties.[26]

Even if one accepts the assumption that the difference in labor earnings of urban residents does not reflect any difference in labor capacities,

[25] See D. Gale Johnson, "Some Effects of Region, Community Size, Color and Occupation on Family and Individual Income," *Studies in Income and Wealth*, Vol. XV (New York, National Bureau of Economic Research, 1952), p. 64. See also pp. 57-63 for a discussion of wages and labor earnings in the South compared to other regions.

[26] *Ibid.*, pp. 57-63.

there is a difference in the ratio of farm migrant and urban incomes in the Corn Belt and Cotton Belt.

It should be noted, however, that the occupational distribution of the Corn Belt migrants reflected an earnings value of about 3 per cent more than for all the farm to urban migrants from the North Central States, while the combined occupational distribution for all Cotton Belt migrants was virtually identical with that for the South as a whole. Thus if one reduced the ratio of migrant to urban incomes from 0.96 to 0.93, this might be a reasonable estimate for the North Central States as a whole. While the difference that remains of approximately five per cent in relative incomes after this adjustment is probably greater than can be explained by sampling errors, it does not seem unduly large given the other adjustments that have been made in the data.

The major surprise in the results is the nonwhite results. The consistency of results for the two samples creates doubt that the high ratio can be explained by sampling variability.

V. *Qualifications and Conclusions*

If the occupational experience and wage or salary income of recent migrants from farm to nonfarm areas can be used as an indication of labor capacity, and if farm migrants are representative of the parent farm population,[27] then farm people have a labor capacity approximately 90 per cent of nonfarm people of the same age and sex. Two main hypotheses are indicated in this summary statement and the conclusion obviously depends upon their acceptance.

I believe that the first of the hypotheses may be subject to some reservation. The occupational and wage experience of farm migrants in the first year or so following migration may underestimate the level of their labor capacities. Such an underestimate would occur if migrants tended to improve their occupational or income situation to a greater degree than the rate of advancement normally associated with age and experience. This proposition is one that can be put to empirical test and such a study is now under way.

It should be noted that in all analyses and calculations medians have been used instead of arithmetic means. However, we know that distributions of wage or salary data are not symmetrical, but exhibit an important degree of skewness, with the median less than the means. If the ratio of the mean to median were the same for all of the wage distributions used, it would make no difference in any of the results obtained in our analysis. However, though there is evidence that the ratio of the

[27] It is argued that the farm migrants are representative of the farm population only after adjustment is made for age and sex.

mean to the median is generally larger in the higher than in the lower-paying occupations, given the diversity within the broad occupational groups used by the Census, there is no systematic relationship between the mean and median as the median wage income rises.[28]

Though some doubt may be cast upon the accuracy of means calculated from open-ended distributions, comparisons were made using the calculated means as well as the medians in estimating the earnings value of occupational distributions. In every case the change in the results was very minor. For example, though the ratio of the income value of the occupational distribution of male farm migrants to urban areas to the same estimate for urban nonmigrants was slightly less when means rather than medians were used, the results when rounded to the nearest per cent were identical. In general the effect of using the estimated means rather than medians would not have changed the results given in Table III by more than one per cent.

The results obtained have several important empirical or practical applications, of which two may be noted quite briefly. One is the relevance of the results to comparisons of farm and nonfarm incomes, or more specifically, to comparisons of labor returns to farm and nonfarm workers.[29] Any comparisons of returns for large and relatively heterogeneous labor groups are always suspect, unless an effort is made to determine the relative equivalence of the labor capacities of the groups. The present results, however, should not be used directly without first standardizing the labor groups being compared for age and sex distributions. If this is done, it may well be found that the farm labor force has a larger proportion of its members in the age groups with lowest earnings. However, the effects of the unfavorable age distribution are likely to be largely offset by the relatively small proportion of females in the farm labor force compared to most other groups. Using 1940 urban wage distributions by age and sex as weights, the 1940 farm labor force had an earning capacity about 4 per cent below the nonfarm labor force. Thus, if real labor returns were as much as 14 per cent lower for the average farm worker than for the average nonfarm worker, this might well be consistent with equal real returns for comparable workers.

[28] Estimates of the mean for the seven nonfarm occupational groups for males were made from the available distributions. The ratios of the estimated mean to medians for experienced workers receiving more than $100 in 1939 were: (1) Proprietors, etc., 1.22; (2) professional and semi-professional, 1.20; (3) clerical and sales, 1.14; (4) craftsmen and foremen, 1.06; (5) operatives, 1.07; (6) service workers (excluding domestic), 1.18, and (7) laborers, 1.12. Source: Sixteenth Census, *Population*, Vol. III, *Labor Force*, Part I, Table 72.

[29] See L. H. Bean, "Are Farmers Getting Too Much?" and comments by D. Gale Johnson and J. D. Black, Rev. Econ. Stat., Aug., 1952, XXXIV, 248-61.

A second application of these results is the assurance that they provide to new employers who might wish to locate in areas of low farm incomes. The evidence indicates that such employers will find individuals having or capable of quickly achieving a wide range of skills. Only in the managerial and professional categories is it likely that new employers will have difficulty in recruiting a labor force roughly equivalent to that available almost anywhere in the United States. The evidence provided by the data for farm migrants is perfectly consistent with the favorable labor productivity experiences of many firms that have located in rural areas where farm incomes have been low.

FUTURES TRADING AND HEDGING

By HOLBROOK WORKING*

A good deal of difference of opinion on the utility of futures trading persists even among economists who have studied the subject rather closely. Some, at least, of this disagreement is traceable to imperfect concepts that emerged in connection with early academic studies of futures trading. Such concepts have tended to survive on the strength of their partial validity, despite shortcomings evident to the well-informed. Businessmen and others who are intimately acquainted with futures trading and its consequences tend to realize (often unconsciously) the defects of such imperfect concepts, to employ the concepts so far as they are valid and useful, and to avoid drawing any seriously mistaken conclusions from them. People who have little direct knowledge of futures trading and its observable results have no such protection against false inferences. If, like most economists, they are accustomed to rely on deductions from what seem to be well-established premises, they are especially vulnerable to the imperfections of basic concepts.

I. *Origin and Nature of Futures Trading*

Much of the popular suspicion of futures trading stems from a sense of mystery associated with it. It is in this respect, and some others, rather like bank credit. Futures trading, like banking, is an institution that developed as a contribution to efficiency of a relatively free competitive economy. A primitive form of futures trading emerged spontaneously in various market centers at least as early as 1850. Only in the grain trade at Chicago, however, was the demand for a means of hedging commercial risks then strong and persistent enough to permit this unconventional form of trade to survive the fluctuations in speculative interest, overcome conservative opposition, and live through the stormy period of experimentation necessary to put it on a firm footing. When that had been accomplished at Chicago, the new form of

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trading was soon adopted at other market centers and for other commodities than grains.[1]

Futures trading in commodities may be defined as *trading conducted under special regulations and conventions, more restrictive than those applied to any other class of commodity transactions, which serve primarily to facilitate hedging and speculation by promoting exceptional convenience and economy of the transactions.*

This may seem to some an inadequate definition. It does not say that futures trading is buying and selling for deferred delivery; it draws only a slender line of distinction between futures transactions and "cash" transactions (dealings in the "actual commodity"); and it makes the distinction between futures trading and other sorts of trading turn primarily on *purpose* rather than on more easily and objectively recognizable criteria. All of these characteristics are in fact merits of the definition.

It would be inaccurate to define futures trading as always involving purchase and sale for deferred delivery. Trading in the September wheat future, for example, is done in the month of September as well as in earlier months, and in that month it often happens that some sellers of September wheat intend to make immediate delivery, and the purchaser knows that he may expect to receive immediate delivery. The price of the future is then in fact a spot price. One might, of course, qualify the statement by saying that *most* futures trading is for deferred delivery. The statement would then be true, but objectionable in a definition because it would focus attention on a characteristic (deferred delivery) that has little distinguishing value. A great deal of buying and selling that is *not* futures trading involves delivery at some later time. In international commodity trade in staples, purchases calling for delivery two or three months or more in the future are commonplace, quite apart from true futures trading, and independently of whether or not futures trading exists in the commodity. Much of the trade in manufactured products as diverse as flour, steel rails, and machine tools (none of which has futures trading) involves purchase on contracts entered into several months in advance of the specified delivery date; in the case of machine tools, the interval may sometimes

[1] This, in two sentences, is the story that can be read from scattered comments in Charles H. Taylor, *History of the Board of Trade of the City of Chicago* (Chicago, 1917). Passages in Vol. I, pp. 146-47, 192, 217, 317 and 332, among others, cover the main developments through 1865, when the Board of Trade at last assumed responsibility for aiding and governing the conduct of futures trading.

H. C. Emery, in *Speculation on the Stock and Produce Exchanges of the United States* (New York, 1896) traces the history of trading that had at least some essential characteristics of that done in futures, from institution of the use of warrants by the East India Company in 1733 (p. 35), and says that "Futures were sold in some kinds of grain in Berlin by 1832, and some years earlier in France and Holland" (footnote, p. 41).

be measured in years. Because the people who turn for enlightenment to a definition of futures trading are often unaware of the wide prevalence of forward purchases (except in retail trade), the characterization "usually for deferred delivery" would fail to be generally recognized as only slightly narrowing the area of reference, and would divert attention from more sharply distinguishing characteristics.

The definition given above does in fact distinguish clearly between futures transactions and other transactions—so clearly that there need never be any problem of identification except in such cases as appeared when futures trading was taking its first steps in evolution from other trading and was not yet clearly differentiated. The definition lacks sharpness only in the sense that it does not make futures trading appear very different from other trading. That is a merit, because futures trading in fact has no distinguishing economic characteristics except those stated in the definition, or resulting from them (such as exceptional volume of trading, frequency of transactions, and publicity of quotations).

If a reader feels that the foregoing definition does not distinguish strongly enough between futures trading and other trading in commodities, it may be either because he underestimates the remarkable convenience and economy which are the primary distinguishing characteristics of futures trading, or because he mistakenly believes it to have peculiar characteristics that it does not have. Its extraordinary economy is illustrated by data cited below, in another connection, indicating that a trader in cotton futures could make a very satisfactory net income on the basis of a *gross* profit margin of about 23 cents per thousand dollars worth of transactions—a gross profit of one-fortieth of one per cent.

Mistaken impressions of the difference between futures trading and other trading have been furthered by a language difficulty that arises in connection with the frequent need to speak collectively of all-other-sorts of trading, as against futures trading. There is no good and convenient word for the purpose—and perhaps there cannot be, simply because the need is to designate all of a heterogeneous category except one special, narrow segment of it. "Nonfutures" would be an accurate and transparent term for the purpose, but an awkward one. In this situation, convenience has been served most commonly by using the word "cash" to mean "nonfutures." The practice probably originated in the Chicago grain trade, contemporaneously with the origin of sustained futures trading. Its application involved two shifts of meaning: (1) use of "cash" to designate, not immediate *payment*, as is usual, but immediate *delivery*; and (2) extension of the altered meaning to cover all terms of delivery except those involved in futures contracts. These

changes left the word with no logical merit for the purpose except its brevity. In the cotton trade, the common word for "nonfutures" is "spot." This is inherently more confusing than use of the term "cash," because "spot" continues to be used in the trade also in its specific sense of "immediate delivery"; but the grain trade has lost such potential relative advantage of clarity as it might have had, by using "cash" also as equivalent to "spot" in the sense of "immediate delivery."[2] Most seriously misleading is the frequent resort to use of "actual" to mean "nonfutures," as when purchases on terms other than those of futures contracts are distinguished as purchases of the "actual commodity." That expression is used to *include* forward purchases other than on futures contracts, even though all forward purchases are alike in the fact that there is no acquisition of the actual commodity at the time of purchase.[3] Like the other expressions used for the same purpose, it is a verbal expedient only vaguely defensible in terms of the normal meaning of the expression. Futures contracts involve transactions in the actual commodity as truly as do any other forward transactions.

As regards failure of the definition to give easily and objectively recognizable criteria for identifying futures trading, it should be noted that there is no practical problem of identification except in cases of primitive futures trading, and in such cases purpose is the only available criterion;[4] otherwise, futures trading has always gone under that name, or the equivalent in another language. The definition should indicate the essential distinguishing nature of futures trading, and that is not done by mere listing of superficial technical characteristics, specified in regulations intended to promote convenience and economy. Reliance on these superficial characteristics for definition encounters also the difficulty that they have varied widely from time to time and from place to place. Consequently, definitions based on such characteristics show an historical trend toward increasing complexity and obscurity as later writers tried to remedy technical shortcomings found in earlier definitions.[5]

[2] This is not to say that anybody in either the cotton or the grain trade *is* confused by these practices any more than initiates are confused by the colloquial uses of "buck," "date," and "doll" (all words with the same brevity as "cash" and "spot"); but the usage is a bit frustrating, and even misleading, to an inquiring novice.

[3] Whether use of the expression has its foundation directly in this characteristic, or in the related fact that *speculators* use futures contracts, as they may any forward contracts, to avoid necessity for *handling* of the actual commodity, is a matter of surmise.

[4] The characteristics of convenience and economy being at that stage not well developed.

[5] See, for example, the evolution of definitions from H. C. Emery, *op. cit.*, p. 46, through J. G. Smith, *Organized Produce Markets* (London, 1922), p. 44; C. O. Hardy, *Risk and Risk Bearing* (Chicago, 1923), pp. 205-06; J. B. Baer and O. G. Saxon, *Commodity Exchanges and Futures Trading* (New York, 1949), pp. 132-34.

II. *Hedging as a Basis for Futures Trading*

An interesting conflict of evidence has emerged regarding the comparative rôles of speculation and hedging in sustaining futures trading. Most of the available information prior to about 1920 encourages the view that futures trading rests primarily on an urge for speculation. Hedging is rarely mentioned except in arguments justifying the continuation of futures trading. One gains the impression that hedging, like a hitchhiker, seized the chance for a ride since speculation presented the opportunity. But as statistics have been accumulated that give appropriate quantitative information on futures markets, year in and year out, hedging begins to look like the driver, and speculation in futures like a companion going where hedging gives it opportunity to go.

The first conspicuous evidence in this direction came in studies of the Grain Futures Administration (predecessor of the present Commodity Exchange Authority) that showed the volume of open (outstanding) futures contracts in each commodity rising and falling each year in rough correspondence with the volume of the commodity in commercial hands and likely to be hedged.[6] Speculators tend to be most heavily committed in futures, not during the growing season of a crop, when prices are most variable, but some time after harvest, when large stocks have moved into commercial storage and been hedged.

As between commodities, the volume of open contracts varies likewise with the amount of the commodity that is hedged. The volume of open contracts in wheat futures in the United States during recent years has averaged about 90 million bushels, while the volume in corn futures has averaged not much over 50 million, though corn has been produced in nearly three times the volume of wheat. The reason is that much less corn than wheat gets into commercial hands (farmers rarely or never hedge the stocks that they hold). Oats, produced in volume less than half that of corn and, like corn, stored mainly on farms, has had an average volume of open futures contracts less than half that of corn.[7] So one may go through the list of commodities in which there is futures trading and find, wherever there is information on the amount of hedging use of futures markets, an unmistakable connection between size of the futures market and the amount of hedging that the market is called on to carry.[8]

[6] See, for example, the summary of much earlier work in G. Wright Hoffman, *Grain Prices and the Futures Market*, U. S. Dept. Agric., Tech. Bull. No. 747, January 1941, pp. 33-38.

[7] Data are conveniently available in *Agricultural Statistics* (Washington) for any recent year.

[8] Size of a futures market is better judged by volume of open contracts than by volume of trading because of the wide variation between markets in proportion of trading con-

Though the amount of speculation on a futures market seems to depend so much on the volume of hedging, there is also a connection in the other direction. As between different exchanges dealing in the same commodity, there is a strong tendency for hedgers to prefer to use the exchange which has the largest volume of speculative trading. We shall examine the reason for this later. As regards commodities, it may be observed that in some the volume of hedging has, at times at least, been restricted by absence of sufficient speculative interest to carry the hedges.[9] In the United States, no futures market for a commodity which is chiefly imported, has flourished like the markets for the more important domestically produced commodities. This may be not entirely because the imported commodities give less occasion for hedging, but partly because there are relatively few people in the United States who have acquired an interest in those commodities sufficient to inspire speculation in them.

When one reviews evidence on the earlier history of futures trading, making allowance for the tendency for sporadic news and comment to concentrate on the unusual, and for exceptional outbursts of speculation to draw special attention, one can find reason to think that a desire for hedging opportunities may have always provided the primary support for futures trading. It seems reasonable to suppose that a primitive form of futures trading in grains was able to survive and develop to maturity in Chicago in the middle of the last century, whereas similar trading tried somewhat earlier in Europe was abandoned, because there was much more occasion for hedging the large stocks of grain that came into commercial hands in the Chicago area than for hedging the much smaller stocks of European markets. It seems quite clear that the first successful futures trading in wheat in Great Britain was based on contracts for Californian wheat because that was the wheat which importers found most need to hedge, on account of the long periods over which importers held ownership while the wheat travelled by sailing vessel around Cape Horn to Britain.[10]

One can imagine existence of futures trading purely on the basis

tributed by "scalping" and by other trading that involves holding a commitment for only a few minutes or hours, with correspondingly small speculative risk and small economic significance.

[9] For example, such an inference seems to follow from information in Blair Stewart, *Trading in Wool Top Futures*, U. S. Dept. Agric., Circ. No. 604, August 1941, pp. 16-26.

[10] See Holbrook Working and Sidney Hoos, "Wheat Futures Prices and Trading at Liverpool since 1886," *Wheat Studies of the Food Research Institute* (Nov. 1938), XV, 125, 142-44. I would now attach less importance than is done there to the uniformity of the quality of the Californian wheat, judging that factor to have been important mainly in the preference for the Californian over the Indian wheat contracts, in which also there was effort for a time to maintain futures trading.

of desire of people to speculate; but apparently futures trading cannot long persist except on the basis of conditions that create speculative risks which somebody must carry, and which some people are led to transfer to others by hedging. The reasons for choosing thus to transfer risks deserve our attention next.

III. *Misapprehensions about Hedging*

It is common to suppose that hedgers exercise no part in determining the price of the commodity in which they deal, and this supposition is substantially valid as regards those who practice hedging uniformly.[11] But most hedgers are engaged in a business that requires them to keep informed on many aspects of the commodity situation, with the result that many hedgers often form quite definite opinions on price prospects. Except in firms that have a strict rule against taking hedgable risks, it is common, therefore, for stocks to be carried unhedged at times, when the responsible individual expects a price advance, and for stocks of the commodity to be hedged at other times. Some individuals and firms hedge stocks only when they are particularly fearful of price decline.

Such discretionary hedging, involving a firm in the practice of both hedging and speculation, seems to be especially prevalent among dealers and processors who handle commodities such as wool and coffee, that have relatively little public speculation in their futures markets.[12] When hedge selling in such a futures market becomes heavy, the price may readily be depressed to a point where a good many dealers and processors are attracted by the possibilities of profit through speculative holding of the commodity. Even among handlers of commodities which attract broad public participation to their futures markets, such as wheat, discretionary hedging is not uncommon.[13] Consequently the existence of futures trading in a commodity and widespread use of futures for hedging do not in fact mean that the responsibilities of price formation are shifted entirely, or even mainly, to people who deal only in the commodity futures.

A major source of mistaken notions of hedging is the conventional practice of illustrating hedging with a hypothetical example in which

[11] Not entirely valid because hedgers are the active agents in determining the *relation* of spot to futures prices, and to that extent they play a major rôle in formation of the spot price.

[12] The case of wool has been documented (*cf.* Blair Stewart, *op. cit.*); the inference that similar situations exist in certain other commodities is based on fairly reliable trade reports.

[13] *Cf.* the Federal Trade Commission's *Report on the Grain Trade* (Washington), Vol. I (1920), pp. 213-27; and Vol. VII (1926), pp. 38-57; and Holbrook Working, "Financial Results of Speculative Holding of Wheat," *Wheat Studies* (July 1931), VII, 417-28.

the price of the future bought or sold as a hedge is supposed to rise or fall by the same amount that the spot price rises or falls. Let us instead consider hedging realistically in terms of some actual prices. The prices to be used will be those for wheat at Kansas City on the first trading day of each month in which futures matured during the crop-year 1951-52.[14]

On the first business day of July 1951, a merchant or processor[15] considering the purchase of the cheapest quality No. 2 Hard Winter wheat (the quality represented by quotations on Kansas City wheat futures) found such spot wheat selling at 3 cents per bushel under the price of the September future. If he bought spot wheat, hedged it in the September future, and carried the wheat until the first business day of September, the results, in cents per bushel, would have been as shown below:

Quotation	Date and Price		Gain or Loss
	July 2	Sept. 4	
Spot No. 2 Hard (low)	$229\frac{1}{4}$	$232\frac{1}{2}$	......
September future	$232\frac{1}{4}$	$233\frac{1}{2}$	......
Spot premium	−3	−1	+2 (gain)

The profit of 2 cents per bushel is calculated above, in what may seem an awkward way, from the change in spot premium (a negative premium, or discount, on each of these dates). It is awkward, however, only for those to whom it is unfamiliar. The hedger tends to calculate his profits in this way because he would buy the wheat on July 2 primarily for the reason that he could get it at discount of 3 cents per bushel under the price of the September future. In fact, the bargaining which preceded the purchase would normally proceed in terms of discount rather than of price, the price being ascertained by reference to the latest futures price quotation, after sale at a mutually satisfactory discount had been agreed on.[16]

[14] Kansas City is used rather than Chicago because changes in the major wheat-producing areas and in the normal lines of movement of the commodity have left Chicago with a vestigial spot wheat market that no longer affords a good source of spot price quotations.

[15] The case of a merchant or processor deserves to be considered rather than that of someone not in such a business, who might buy merely for storage, because merchants and processors gain auxiliary benefits from having stocks on hand that give them a competitive advantage in storing. Their competition for the returns available from storage leaves little opportunity for profitable storing as an independent enterprise.

[16] This is the normal procedure in connection with spot sales of wheat at Kansas City and at other markets with active futures trading. The actual bargaining on July 2, however, would have been in terms of premium or discount in relation to the price of

The fact that on September 4, No. 2 Hard Winter wheat sold at a discount under the September future, though it is the grade of wheat currently deliverable on the future, is accounted for by the fact that the spot price applies to wheat "on track," requiring additional expenditure to get it into a warehouse.[17] Wheat was then moving into commercial storage on a large scale because of heavy marketing by producers.

On September 4, our grain merchant or processor would probably not have sold the wheat he bought earlier, but instead would have bought more wheat. If he did that, and held until December 1, the results, in cents per bushel, would have appeared as follows:

Quotation	Date and Price Sept. 4	Dec. 1	Gain or Loss
Spot No. 2 Hard (low)	252½	252	......
December future	258¼	252	......
Spot premium	−5¾	0	+5¾ (gain)

In this case the spot price of the cheapest deliverable wheat came, on December 1, to exact equality with the price of the December future, and the gross return for storing the wheat was exactly what might have been expected, on September 4, from the fact that such wheat was then selling at a discount of 5¾ cents under the price of the December future.

the *July* future, the prospective hedger bearing in mind the prevailing discount of the July future under the September.

Since the gain or loss from hedging calculated in such tabulations as that in the text above depends only on the spot premiums, the prices included in the tabulations are no more than interesting collateral information. The spot premium or discount for a specified quality of the commodity rarely changes much during the course of a day or even a week. With regard to the futures prices, however, it is pertinent to note the time of day. Those used here are the closing prices for the day. The spot prices are closing prices of the future currently being used as a basis for spot sales, plus the quoted premium for lowest quality No. 2 Hard Winter wheat. The source is the Kansas City *Grain Market Review,* which quotes also daily high and low spot prices for the various grades, in which the low quotation for each grade is obtained by adding the premium for lowest quality wheat in that grade to the lowest price of the future for that day.

[17] Sometimes the spot price on track in a delivery month falls to a considerable discount under the near future because of lack of warehouse space for economical storage. The spot price on track tends to be at a *discount* under the price of a current-month future, which is then also effectively a spot price, when the prevailing direction of movement of the commodity is into storage; it tends to stand at a premium over the future when the prevailing direction of movement is out of storage. Moreover, the spot quotations for the cheapest wheat of deliverable grade may represent wheat of slightly better quality than that which will be delivered on futures contracts. To be graded No. 2, wheat must meet all of several requirements; the wheat delivered on futures contracts may be at or near the minimum in all respects when the cheapest wheat on which spot quotations are available is close to the minimum in only one of the grade requirements.

In these calculations we have left out of account the possibility that a merchant who bought at a discount of 5¾ cents on September 4 might have got wheat of a little better than minimum No. 2 quality—wheat which might have been sold on September 4 at a discount of, say, 5½ cents, rather than 5¾ cents, if the seller had been willing to look farther for a buyer. And we have ignored the possibility that on December 1 the merchant might have sold at a premium of ½ cent over the December future by virtue of the slightly superior quality of the wheat, and by finding a buyer who did not choose to shop around enough to get the best bargain possible. In other words, we have left out of account sources of normal *merchandising* profits.

On December 1 a merchant or processor may seem to have had no incentive for longer holding of wheat for which he had no immediate need. The spot price then was on a par with the December future, and at a premium of 1 cent over the price of the May future. But let us suppose that he continued to hold, with a hedge in the May future, and see what would have happened if he held until May 1. Though we imagine that the wheat is already in storage, we may make the next calculation as though it concerned a new purchase:

Quotation	Date and Price Dec. 1	May 1	Gain or Loss
Spot No. 2 Hard (low)	252	247¼	......
May future	261	238¼	......
Spot premium	+1	+9	+8 (gain)

This time a merchant would have gained a gross return of 8 cents per bushel from storage. It would have been in part a windfall profit, since he had no advance *assurance* of obtaining it; but he would have gained it on a quite conservative venture. He was well assured of not losing more than 1 cent per bushel (because the spot wheat that he held would surely sell at as high a price as the May future at some time in May), and he could count with virtual certainty on spot wheat going to a substantial premium over the price of the May future at some time between December and May.[18]

As of May 1, there remained no prospect of profit from continued storage of wheat during that crop-year, unless perhaps for a few days more. Before the end of the month, the spot premium, based on the

[18] One of the indications of this prospect was the fact that spot wheat had already reached a premium of 1 cent over the May future by December 1. The cause, of which any holder of large wheat stocks would have been well aware, was the holding by growers of some 300 million bushels or more under nonrecourse loans offered by the Commodity Credit Corporation.

May future, would have to fall from 9 cents to near zero.[19] Moreover, the spot price on May 1 was at a premium of 18 cents over the July future, and that premium should be expected to fall to zero or below by July 1. The outcome, if a merchant in fact held any wheat in storage from May 1 to July 1, was as follows:

Quotation	Date and Price May 1	July 1	Gain or Loss
Spot No. 2 Hard (low)	247¼	218¾	......
July future	229¼	225	......
Spot premium	+18	−6½	−24½ (loss)

Probably some merchants did store a little wheat from May 1 to July 1, hedged in the July future, and did take the loss per bushel indicated by the above calculation. Grain merchants, like operators of retail stores, must try to keep adequate stocks on their shelves to serve their customers. But a merchant who hedged would have seen clearly on May 1 that any wheat that he might continue to hold until July would involve a loss, as surely, though not so completely, as would Christmas trees held until December 26.

The foregoing examples of hedging tend in one respect to be a little misleading; spot premiums do not always follow so obviously logical a pattern through the course of a crop year as they did in 1951-52. If spot wheat in July, were regularly, in all years, at a moderate discount under the September future, and if spot wheat, in September, were always at a large discount under the December future, and spot wheat in May always at a large premium over the July future, merchants and processors would have less need than they do for futures markets.[20] They would then have no need to watch spot-future price relations in order to judge when to accumulate stocks, and when to draw them low. But our purpose at the moment is merely to see how hedgers use spot-

[19] Not necessarily to zero, because deliveries on futures contracts would consist of wheat in public elevators; in May, wheat on track tends to be worth more than the same quality of wheat in a public elevator because it is already loaded in a freight car and ready to be moved to wherever it is wanted.

[20] When spot wheat in May is at a premium over the July future, it is not because the new wheat crop—coming to market in large volume by July—is expected to be large, but because current supplies of old wheat are scarce. (In May 1952 the scarcity applied only to commercially available supplies, being a result of the large holdings of wheat by the Commodity Credit Corporation in connection with its price-support operations.) On the subject of "inverted" intertemporal price relations in general, see Holbrook Working, "Theory of the Inverse Carrying Charge in Futures Markets," *Jour. Farm Econ.* (Feb. 1948), XXX, 1-28; "Professor Vaile and the Theory of Inverse Carrying Charges," *Jour. Farm Econ.* (Feb. 1949), XXXI, 168-72; and "The Theory of Price of Storage," *Am. Econ. Rev.* (Dec. 1949), XXXIX, 1254-62.

futures price relations as a guide in inventory control, thereby earning a return for holding stocks that must be stored by someone. We may reasonably avoid being led here into discussion of the frequent effects on spot premiums produced by exceptional export demand, by governmental price supports, or by unusual holding disposition on the part of producers.

We should now note three facts concerning hedging. First, contrary to a common impression, hedging of the sort here considered is not properly comparable with insurance. It is a sort of arbitrage. We shall consider later an example of conditions under which hedging may in fact be profitably compared with insurance, but such conditions obtain for only a small proportion of the hedging that is done on futures markets. Most hedging is done in the expectation of a change in spot-future price relations, the change that is reasonably to be expected being often indicated quite clearly by the current spot-future price relation.

Secondly, hedging does not eliminate risks arising from price variability. Risk is less than on stocks held unhedged, but it still exists. When the commodity involved is of quite different quality than that represented by the future, or in a location remote from that to which the futures price relates, the risks assumed by hedgers tend to be much larger than is suggested by the examples given here.

And thirdly, hedging is not necessarily done for the sake of reducing risks. The rôle of risk-avoidance in most commercial hedging has been greatly overemphasized in economic discussions. Most hedging is done largely, and may be done wholly, because the information on which the merchant or processor acts leads logically to hedging. He buys the spot commodity because the spot price is low *relative to* the futures price and he has reason to expect the spot premium to advance; therefore he buys spot *and* sells the future. Or in the case of a flour miller, he sells flour for forward delivery because he can get a price that is favorable *in relation to* the price of the appropriate wheat future; therefore he sells flour *and* buys wheat futures. (Here the arbitrage, it may be noted, is between two forward prices, that for flour and that for wheat.)[21]

Incidentallly, recognition of the fact that hedging may be done purely as a logical consequence of the reasoning on which the hedger acts (reasoning, for example, that the spot price is low relative to the

[21] Two instructive explanations of hedging written by hedgers themselves, such as are not often found, are: Ellis D. English, "The Use of the Commodity Exchange by Millers," *Proceedings, Fifth Annual Symposium* (Chicago Board of Trade, 1952, mimeo.) pp. 22-29; Virgil A. Wiese, "Use of Commodity Exchanges by Local Grain Marketing Organizations," *ibid*, pp. 108-16.

future) rather than from any special desire to minimize risks, helps to explain why many dealers and processors sometimes hedge and sometimes do not. As we have remarked, merchants and processors, even though they hedge, have need to keep informed on conditions that affect the price of the commodity and they may often have opinions on prospective price changes. If a merchant is accumulating stocks at a time when spot premiums are low—his most reliable basis for such action—and if at the same time he is fairly confident of an advance in futures prices as well as in spot premiums, why should he not carry the stocks unhedged, if he can afford to take some extra risk?

Perhaps the main reason that hedging, as commonly practiced on futures markets, has been so widely misunderstood and misrepresented is that economists have tried to deal with it in terms of a concept that seemed to cover all sorts of hedging. This would be desirable if it were feasible, but the general concept of hedging as taking offsetting risks wholly, or even primarily, for the sake of reducing net risk, serves so badly as applied to most hedging on futures markets that we need another concept for that most common sort of hedging. To put it briefly, we may say that hedging in commodity futures involves the *purchase or sale of futures in conjunction with another commitment, usually in the expectation of a favorable change in the relation between spot and futures prices.*

An unfortunate consequence of the prevalent misconception of hedging has been that, while it has correctly credited futures markets with allowing merchants and processors to curtail their risks, it has diverted attention from a service of probably larger economic importance. Merely by supplying simultaneous quotations applying to various subsequent dates, futures trading tends to promote economically desirable control of stocks; and futures markets, through their use for hedging, make the holder of stocks sharply aware of any losses that must be expected from carrying unnecessary stocks in times of relative shortage of supplies, and provide assured[22] returns for storage over periods when there is a surplus to be carried. A merchant or processor with warehouse facilities will undertake storage in response to prospect of a 10-cent per bushel gain from carrying hedged stocks about as readily as he will undertake storage in response to an offer of 10 cents per bushel as a fee for storing government-owned grain. Indeed he may undertake storage for the return promised by hedging more willingly than for the fee, because the stocks that he holds hedged need be carried only as long as he wishes, and can be a source of convenience or of profit in connection with his merchandising or processing business. The argu-

[22] Though subject to some risk, as we have seen.

ment often made that management of reserve stocks of commodities should be a governmental function rests in large part on ignorance of the effectiveness with which the hedging facilities of futures markets assure private carrying of stocks in about as large a volume as can be justified on purely economic grounds.[23]

The claim sometimes made by able economists[24] that prices of such storable commodities as wheat, corn, and cotton fluctuate excessively because stocks are accumulated at wrong times, and not accumulated when they should be, seems also a consequence, indirectly, of the prevalent misconception of hedging. Mismanagement of stocks by nonhedgers would have to be on a very large scale to produce an over-all tendency toward perverse stockholding in any commodity with a futures market much used for hedging.[25]

IV. *Price Fluctuations*

Futures trading tends to emerge and persist especially in commodities which are subject to exceptionally large price fluctuations, arising from unpredictable variations in production, from other supply uncertainties, and from relative inelasticity of consumption demand.[26] Susceptibility of a price to large and unpredictable changes tends to stimulate hedging, and therefore futures trading, whether handlers of the commodity seek insurance against the risks of price change, or are led into hedging merely because they find spot premiums a more reliable guide to inventory control than are the prices themselves. (The relative superiority of spot premiums as such a guide depends of course on the price variability.) On this account, the fact that prices of commodities which have

[23] If considerations of national defense warrant the carrying of commercially uneconomic stocks of a commodity, government should of course assume the responsibility and the financial burden of carrying such excess stocks.

[24] For example, T. W. Schultz in *Production and Welfare of Agriculture* (New York, 1949), pp. 172-74.

[25] The hypothesis of perversity of stockholding tendencies is not supported by any statistics that I know, but is contradicted by them. Of particular interest is the fact that in the years when one could speak realistically of a world wheat market, the countries in which year-end (June 30) stocks of wheat varied in rational correspondence with world wheat supplies were the countries where hedging was practiced on a substantial scale. In most countries, year-end stocks of wheat varied little, and primarily with size of the previous *domestic* crop. Britain, with a futures market but with only small storage facilities, contributed little to the carrying of world wheat surpluses. Canada contributed more; and the country which most consistently carried large stocks at the end of any year of world wheat surplus, and reduced stocks to a minimum in times of world wheat shortage, was the United States. *Cf.* Holbrook Working, "The Changing World Wheat Situation," *Wheat Studies* (Sept. 1930), VII, 433-52.

[26] No reference is made here to changes in demand as a cause of *exceptional* price variability, because those demand changes which contribute to price instability of staple commodities are mainly of the sort that affect all sensitive prices similarly.

futures trading are found to be more variable than most other prices gives no ground for supposing that futures trading is a *cause* of the exceptional price variability.[27] It is none the less pertinent to raise the question whether existence of futures trading has a stabilizing or destabilizing influence on prices, and to seek some objective evidence on the question.

The results of attempts to determine whether prices of commodities that have futures trading fluctuate more or less than they would in the absence of futures trading have been generally inconclusive. Even if clear proof were given that futures trading tended somewhat to restrict price fluctuations, it might still be true that futures prices fluctuate too much. Some criterion is needed for an absolute test by which to determine whether the price fluctuations that occur are excessive, or are, in the main, rational and desirable responses to changing economic conditions and information.

A few years ago I suggested that such a test might be developed from the consideration that prices of durable goods (and especially futures prices) reflect expectations.[28] These expectations are always subject to error, but the errors of expectation might, in an *ideal* market, be only such as must arise from uncertainties inherent in the economic situation. That is, the price of May wheat, for example, might fluctuate, and yet be always the best estimate that could be made at the moment of what the price of wheat should be next May. *Excessive* price fluctuations might be measurable as the amount of fluctuation that occurred over and above the amount attributable to unpredictable changes in the economic situation. Unpredictability of change would thus be taken as the ideal in price behavior.

This idea has been pursued, and appropriate statistical methods have been devised for making the suggested tests.[29] For technical reasons the new approach to the problem of testing price behavior has been applied first to appraisal of the frequent and sometimes large price fluctuations that occur on active futures markets during the course of a day. The results indicate some departure of actual price behavior from the ideal, as was to have been expected, but only slight departures; the observed

[27] It appears sometimes to be so taken nevertheless, even by economists who would be expected to see the fallacy of such an inference.

[28] "The Investigation of Economic Expectations," *Papers and Proceedings, Am. Econ. Rev.* (May 1949), XXXIX, 158 ff.

[29] The tests involve in principle the measurement of serial correlation among price *changes,* which in practice must be present to some extent if price changes are predictable (that this is so may seem obvious, but the proof requires more space than is available here). The statistical measures used have been especially devised to be more sensitive than serial correlation coefficients to the sorts of departure from randomness of change that are to be expected in price series. They have also an advantage of economy in use.

price fluctuations were for the most part such as should occur purely from unpredictable changes in price prospects.[30]

In an ideal futures market in which the price of May wheat, for example, was at all times the best possible estimate of what the price would be next May, no speculator would be able to consistently make money, and the speculation necessary to maintain even an approximation to ideal price behavior would tend to vanish. Speculative profits that are not purely the result of chance must rest on ability to anticipate price changes with some degree of reliability, whereas if a futures price were always the best possible estimate of price at a later date, its changes would be entirely unpredictable.[31] Since many professional traders do make money in actual markets with some degree of consistency, it is evident that they are able to anticipate price changes with some approach to reliability and hence that the price behavior is not ideal. Study of the nature of the price fluctuations that professional traders are able to anticipate may therefore give the best clue to the nature of the imperfections of actual speculative markets—the predictable price fluctuations that would be absent in an ideal futures market, but that are present in actual markets.

Perhaps the largest class of professional traders is that of "day traders"—those who operate primarily on intraday price fluctuations, and who end each day neither net long nor net short in appreciable amount.[32] One such trader in cotton had the following record over a two-month period chosen substantially at random.[33]

Month	Number of Transactions[a]		Average Daily Sales (million pounds)	Gross Profit[b]		Number of days with	
	Total	Per day		Cents per lb.	Per-cent	Gain	Loss
February	1701	77.4	4.9	.0167	.042	15	7
March	1343	64.0	4.2	(c)	(c)	13	8
Total	3044	70.8	4.6	.0093	.023	28	15

[a] Purchases and sales.
[b] Per pound or per dollar of sales.
[c] Infinitesimal; a gross profit of $187.00 on $35 million of sales.

[30] The relative amount of departure from ideal behavior has been measured numerically, but it is not possible to summarize the results meaningfully in brief.

[31] Price changes would always be consequences of new information, unavailable as a basis for prediction before the price change occurred.

[32] Professional traders specialize to such an extent as to make classification meaningful, and the intraday traders especially tend to concentrate on one type of trading.

[33] The record was obtained for this individual because he was regarded as a representative, successful, day trader. The period was simply the two months ending at the time (in 1952) when he was interviewed.

During the two months of the record, this man averaged nearly 70 trades per day, which is at the rate of about one every four minutes. His purchases were not bunched during the parts of the day when prices were low, nor his sales bunched during the parts of the day when prices were high, but purchases and sales were distributed throughout the price range of the day.[34] He made money simply by managing to have his purchases, on the average, at prices a little lower than the prices of his sales. On the days on which he made money, his gross profits averaged 1/30 cent per pound. Since the cotton price was about 39 cents per pound, his gross profit on the days when he made money was about 82 cents per thousand dollars worth of cotton that he bought and sold. Net profits, after paying commissions and other business expenses, were substantially less.

The gross profits calculated above are on trading during only the 28 days out of 43 on which he made money. On 15 out of 43 trading days during the two months, he lost money. Such a result might not be surprising in the case of a man who made only a few trades each day, but 70 trades per day—about 35 purchases and 35 sales—gave much opportunity for successes and errors to offset within a day. Nevertheless, he lost money on more than one day out of three, on the average. This is not the sort of experience that most people imagine successful professional traders as having.

Because profits were so uncertain and variable, a calculation of the average rate of profit of this trader over even a two-month period may not give a very reliable indication of the normal profit expectation for such a trader. The figures, for whatever they may be worth, show that in the first of the two months his gross profit averaged 1/60 cent per pound; in the second of the two months, losses nearly equalled gains—his total gross profit for the month would not have covered the commission charges he often paid on a single day's trading. For the two months together, his gross profits averaged about 23 cents per thousand dollars worth of cotton sold—less than one-fortieth of one per cent. Doing such business, he could make a living only by dealing in great quantities of the commodity; he bought and sold an average of over nine thousand bales of cotton—4.6 million pounds—per day.[35]

Another day trader, who was not primarily a true scalper, but sought principally to trade on larger price fluctuations within a day than those

[34] This was ascertained by separately tabulating purchases and sales each day in frequency distributions according to price.

[35] Incidentally, the fact that a gross profit of 23 cents per thousand dollars worth of purchases and sales could permit any net profit at all is striking evidence of the main technical characteristic of futures trading, the economy with which transactions can be made.

on which pure scalpers operate, found that his gross profits during the previous seven months, on the Chicago Board of Trade, averaged 70 cents per thousand dollars of sales—seven hundredths of one per cent. The period beginning with January 1952 was one which he described as especially successful. Giving particular attention, as he did, to somewhat larger price fluctuations than occupy the pure scalper, he made relatively few trades per day in any one commodity, but a considerable total number because on most days he did trading in five or six different commodities.[36]

One might seek to get a large number of records such as those summarized above, and for longer periods, in order to arrive at a conclusion regarding *typical* behavior and profits of day traders, but it is clear from this and other evidence, that the typical day trader and his profits would prove about as elusive as the typical insurance salesman and his income. These records, by themselves, serve as warning that some popular concepts of the manner in which professional traders operate, and of the sources of their profits, may be quite mistaken. With other and more detailed records, they give valuable aid in interpreting results of statistical measurements of price behavior, made on the principle outlined above.[37] All of the evidence converges toward the conclusions that: (1) the price movements that day traders are able to anticipate with even moderate reliability are usually small relative to the total price range for the day; (2) the reliability of their judgment is rather low; and (3) the over-all effect of their trading operates strongly toward "smoothing" the course of prices, helping to make intraday price fluctuations conform closely to our criterion of ideal behavior.

These conclusions bear directly on the question whether the price fluctuations that occur in futures markets within the day tend to be excessive or not. The question is not inherently a very important one because, though price fluctuations in the two months of the illustration covering cotton resulted in an average difference of 0.4 cent per pound between the lowest price and the highest price each day, it would not matter greatly if fluctuations of such magnitude did occur without good reason. The conclusions reached are more important than the specific question to which they apply, because they indicate reasonableness in just that trading and those price fluctuations which may be thought most likely to be unwarranted.

On the question whether the larger price fluctuations that occur over longer periods are in the main warranted, the best evidence that I

[36] A feat comparable to that of playing several games of chess simultaneously, blindfolded.

[37] A full report on the research will be published shortly.

can yet cite[38] is essentially subjective and inconclusive. It is the evidence which led me to question the common assumption, and to try to measure the amount of "excessive" fluctuation that is present in "speculative" prices. During the twenty years of publication of *Wheat Studies* by the Food Research Institute, members of the research staff periodically studied the recent fluctuations of wheat prices and sought to interpret them as warranted by current developments, or unwarranted. For much of that period we sought three times a year to appraise price prospects for the next several months. Everyone concerned with these efforts gained a great respect for the rationality of the price behavior observed. During twenty years some price movements occurred which it seemed possible to appraise at the time as ill-founded or excessive, but these were exceptional. Only rarely did it seem possible to anticipate subsequent price movements with confidence on the ground that the current price appeared unjustifiably high or low.

As regards price changes from year to year, it is entirely clear, as noted in the previous section, that futures markets contribute substantially toward desirable adjustment of stocks carried from one year to another. Whether or not they produce as much flexibility of storage as is desirable they at least operate in that direction.

V. *Costs of Hedging*

We turn now from topics on which there has existed major disagreement, springing largely from imperfect or mistaken concepts, to examine a new, or at least largely neglected, idea that illuminates hitherto obscure aspects of futures trading. The idea came to me through puzzling over two questions:[39] Why does futures trading in a commodity tend to concentrate largely or wholly in one exchange? And why is futures trading on any one exchange usually confined to a single set of contract specifications for a commodity, rather than distributed among several contracts, representing different qualities of the commodity? Hedgers, it may seem, would be best served by having numerous futures exchanges, and several different futures contracts in each, so that hedges could be placed always in a future that applied to a quality of the commodity corresponding closely with that being hedged, and to a location at or near that of the hedged stocks. The answer seems to lie in a cost of hedging.[40]

[38] Pending completion of research under way.

[39] And also from what we learned in the study of intraday price behavior referred to above.

[40] I thought at first that the answer lay in a somewhat capricious behavior of speculators, coupled with a necessity for hedgers to use those exchanges and contracts in which there was sufficient speculation to carry the hedges. But, when this argument was advanced in a paper dealing with a special case ("Western Needs for Futures Markets," mimeo., Food Research Institute, 1952) it drew objections that seem fatal.

There are at least two significant elements to be considered as parts of the cost of hedging.[41] The most obvious one is the commission charge that must be paid on futures transactions.[42] Futures trading must operate with great efficiency to keep this charge so low as not to discourage hedging seriously, since much of the advantage that a hedger gains, as we have seen, comes from a guidance in inventory control that is available without actually placing hedges. In addition to commissions, there is a cost of hedging that can be much larger, arising from what may be called the bivalence[43] of market price. The contribution of price bivalence to costs of hedging declines sharply, as we shall see, with increase in the volume of business done on an exchange, and it declines also with increase in the volume of business in a particular futures contract. It has, therefore, just the characteristics needed to explain observed tendencies in the concentration of futures trading.

Our awareness of the fact that there are usually two (or more) prices for a commodity unit of specific quality in any market at a given time is dulled by the convention of treating wholesale and retail prices as though they were registered in separate markets. But of course they are in fact two separate prices within the same market, differing because of a service that (at least presumptively) goes with the commodity when it is sold at retail.

When, as in the case of houses, for example, the circumstances of trade do not favor distinction between wholesale and retail prices, there remain price differences according to the conditions of sale. Even under stable and well-known market conditions the man who chooses to sell without much search for someone who particularly wants a house like his, takes one price, and the man who chooses to buy without much "shopping" pays a higher price. The difference between the two prices need not represent any exploitation of bargaining weakness, but only a fair margin for an intermediary. Or in a country grain market, a merchant may buy wheat of a farmer at one price and sell it almost immediately to a poultry raiser at a higher price. The difference, again, is likely to represent only a return for service, small in this case because a poultry raiser who had reason to believe that the difference would be large would seek out the farmer and buy from him directly.

In terminal commodity markets (and in security markets) there ap-

[41] One might choose to regard potential speculative profits foregone as a cost of hedging; but though a potential hedger may wisely take account of potential profits from speculation in deciding whether to hedge or not, I think that treating foregone speculative profits as a cost of hedging would not be the best way of taking them into account.

[42] And if the hedger maintains an exchange membership for the sake of the consequent saving in commissions, there are membership expenses to be counted as part of the cost.

[43] Using "bivalent" to mean "two-valued" rather than, as in chemistry, "having a value of two."

pear the same sort of price differences, though smaller, that provide the margin on which merchants in such markets principally operate. In large central markets the small price differences which provide these margins cannot be realistically treated as differences between a wholesale and a retail price. They tend then to be clearly reflected in price quotations only through differences between "bid" and "asked" prices.

A merchant who hedges usually finds his situation in the futures market the opposite of that which he enjoys in the spot market. In his spot dealings he buys at bid prices and sells at the higher asked prices (a fact that we ruled out of consideration in our illustrations of hedging, because we were there concerned with storage and its returns). In his futures dealings, on the contrary, he tends to buy at asked prices and to sell at the lower bid prices. At least he prefers to do so, unless the margin between bid and asked prices is so wide that he is forced to "shop" in the futures market, as well as in the spot market. The merchant is paid for his services to processors and exporters by *receiving* an asked price, and he in turn is willing to pay for corresponding services of dealers in futures by buying often of them at asked prices.

The dealers in futures from whom a hedger often[44] buys at asked prices, or to whom he sells at the lower bid prices, are the so-called scalpers, or other day traders.[45] We saw in the last section some evidence on the very narrow margin which such dealers in futures take. From that evidence it would appear that their margin is of the order of 1/14 to 1/40 of one per cent. Those figures, however, represent averages that are somewhat "watered down" by the effects of transactions between day traders themselves.[46]

Another way of estimating the dealer's margin that a hedger tends to pay on his futures transactions is from the profit margin that scalpers try for. In wheat on the Chicago Board of Trade, this has been typically 1/8 cent per bushel, or a little over 1/20 of one per cent at recent prices. An estimate so derived, however, tends slightly to overstate the margin

[44] "Often," because the purchase or sale of futures made by a hedger does not necessarily go through the hands of an intermediary scalper.

[45] A scalper, in the strict sense, may be characterized as always willing to either buy at 1/8 cent below the last price or to sell at 1/8 cent above the last price (or at such other difference from the last price as market conditions permit); he operates purely on the difference between bid and asked prices, as ordinarily understood. Other professional day traders perform an essentially similar function, but at least partially with respect to somewhat larger price differences. Bid and asked prices tend to be farther apart for large quantities than for small quantities of a commodity.

[46] The first of any pair of transactions by a scalper is made in the belief that he is buying "below the market" from an urgent seller, or selling "above the market" to an urgent buyer. But scalpers often find that they have misjudged the market, or that it has turned against them immediately after such an initial transaction. Then they seek to make the offsetting transaction quickly, often at a loss, and often to another day trader.

actually paid by a hedger, because hedgers benefit from scalpers' mistakes of judgment.

A third basis for estimating the margin that hedgers pay on their futures transactions is afforded by data showing that a loss of 0.21 cents per bushel was taken by processors and terminal grain merchants on 109 million bushels of wheat futures bought (and sold) over a nine-year period.[47] If the futures transactions were virtually all hedging transactions, as may reasonably be assumed, this indicates a hedging cost, in addition to commissions, of slightly over 1/5 cent per bushel, or less than 1/5 of one per cent of the average wheat price over the period. This is a cost figure, however, that includes speculative profits foregone[48] (or, to put the same thing in another light, that includes any return to speculators for carrying the hedges). And it is in any case a cost per bushel bought and sold, whereas the foregoing estimates of scalpers' margins might tend to be paid on purchases and on sales alike. So there is at least no evident inconsistency between these data and the previous estimates of scalpers' margins.

Whether scalpers' margins are less than 1/10 per cent, or as much as 1/5 per cent, a merchant or processor can afford that cost in addition to

[47] The data, from Blair Stewart, *An Analysis of Speculative Trading in Grain Futures,* U. S. Dept. Agric., Tech. Bull. No. 1001 (Oct. 1949), Table 27 (the calculations of loss per bushel are mine) are as follows:

Business	No. of Firms	Transactions (thousand bushels)	Loss (thousand dollars)	Loss per Bushel (cents)
Terminal grain merchants	45	76,054	174	0.23
Processor	44	33,407	55	0.17
Total	89	109,461	229	0.21

Similar data, from the same source, on hedging transactions amounting to 9.6 million bushels by 33 country and subterminal grain merchants, show a loss of 2.6 cents per bushel on their transactions in futures. The magnitude of this loss indicates that more of the hedges against wheat stocks by this group of dealers were carried in periods of rising prices than in periods of declining prices. The classes of grain merchants involved commonly practice discretionary hedging, and those represented in the data apparently chose to hedge at such times that they "protected" themselves against profits from price increase somewhat more than against losses from price decreases. The results tabulated above for terminal grain merchants and processors may also be affected to some extent by the practice of discretionary hedging, though it is much less prevalent among such wheat handlers than among country and subterminal merchants.

[48] Which we wish to leave out of account here, as previously noted. It is scarcely possible to deal with them in general terms, except in such a global average as the one just given, because their magnitude depends so much on special circumstances, including the knowledge and judgment of the hedger.

commission charges of, say, $\frac{1}{10}$ of one per cent.[49] His own dealer's or processor's margin, though small, is usually several times the total of these costs of hedging.

In small and relatively inactive futures markets, however, scalpers must take much wider margins than in the circumstances to which the foregoing data apply.[50] They must do so primarily because their volume of business is restricted to perhaps half-a-dozen transactions per day, or less, as compared with the 70 transactions per day of the cotton trader cited. And, secondly, they must do so because their risks are greater. In an active futures market, a scalper can usually buy and resell within the space of a few minutes, running little risk that some change in news will involve him in a serious loss. In inactive markets, purchase and sale may be separated by hours, or the scalper may buy today and have to wait until tomorrow to sell, running correspondingly large risks of loss from unpredictable developments. And because scalpers must take wider margins on inactive markets, hedging on them is more costly than on active futures markets.[51] Consequently, if a hedger has two futures markets to choose between he tends to do his hedging in the more active one.[52]

The element of hedging cost that arises from scalpers' margins, or from the inconvenience and price disadvantages incurred in the absence of scalpers, explains the restriction of trading almost universally to a single futures contract on one exchange, in the same way that it explains the tendency for futures trading in a commodity to concentrate mainly or wholly on some one exchange. When two futures contracts are offered for trading applying to different descriptions of the commodity, trading tends to become more active in one of them than in the other; scalpers' margins then rise on trading in the less active contract, leading to

[49] Commission charges are not fixed as a percentage of the price; expressed so, they depend on the price, and they vary rather widely among commodities and exchanges, and according to whether the transaction is for a member of the exchange or a nonmember. The figure of $\frac{1}{10}$ of one per cent is representative of commissions for commodities and exchanges with a fairly large volume of business and low commission rates, and is therefore applicable to most of the hedging that is done.

[50] Part of the difference in gross profit obtained per $100 of transactions by the two day-traders for whom data were given, is accounted for by the fact that the second trader operated mainly in commodities which have only moderately active trading.

[51] At some point not very far down on a scale of diminishing market activity, it becomes impossible to conduct scalping as a specialized form of trading and to make a living at it. Then the scalping function is performed by some speculators, and the distinction between scalping and speculation becomes blurred.

[52] The preference, as commonly expressed in trade circles, is for a "broad" market as against a "thin" market. This terminology expresses the fact that size as well as frequency of transactions is important. On the supposition that most readers would understand "active" to mean about what a trader calls "broad," I have thought it unnecessary to introduce the trade terminology into the exposition.

further concentration of hedging, and of other trading, in the more active contract. For example, after five years of use of the Californian wheat contract for futures trading at Liverpool, trading was initiated also (in 1891) in an American Red wheat contract. The latter proved the more popular, and in spite of the important difference between the two kinds of wheat, quickly drew trade away from the Californian contract to such an extent that trading in the Californian was presently abandoned.[53] Maintenance of futures trading in two descriptions of a commodity on any one exchange was found generally impractical early in the history of futures trading, and has rarely been tried in recent years.

These conclusions have some interesting implications. If we are correct in inferring, as seems necessary, that hedgers' responses to cost differentials account for the observed tendency toward concentration of futures trading dominantly or wholly in some one exchange, and wholly in some one contract on each exchange, it follows that hedgers are as a rule unwilling to pay for superior hedging facilities. Does this mean that hedging is usually considered worth while only if it is very cheap—that its advantages are really not very great? Or does it mean something else?

VI. *"Insurance" Hedging*

The question posed above may well be considered in a concrete situation. Grain merchants and flour millers in the Pacific Northwest of the United States have long sought to gain and hold the advantages of futures trading in a contract well suited to their needs. Largely because of the great distance between that area and the main wheat-producing regions of the country, wheat prices in the Pacific Northwest are only loosely tied to prices at Chicago or Kansas City. When the Chicago futures price represents hard wheat, as has commonly been the case,[54] the important quality difference between hard wheat and the soft wheat typical of the Pacific Northwest contributes to disparity of movement between Chicago and Pacific Northwest wheat prices. No. 1 Soft White wheat in Portland or Seattle may sell at 20 to 30 cents per bushel under the spot price of contract wheat at Chicago, or it may sell at 10 cents per bushel, or more, above the Chicago price. Chicago futures consequently afford a very imperfect hedge for soft wheat in the Pacific Northwest.

Efforts to provide good hedging facilities for Pacific Northwest wheat have included maintenance, over many years, of futures trading at

[53] *Cf.* Holbrook Working and Sidney Hoos, *op. cit.*, p. 144.

[54] Though during the last few years the Chicago future has most of the time been effectively a soft-winter wheat future because the deliverable soft wheat was cheaper than deliverable hard wheat.

Seattle and, until 1942, at Portland also. These markets did not flourish,[55] and in 1950 the experiment was tried of providing for trading in North Pacific Coast wheat futures on the Chicago Board of Trade (with delivery on the Pacific Coast). The special Chicago contract failed to attract enough business to warrant its continued use; it seemed to serve only to draw business away from Seattle.

The volume of hedging in a Pacific Northwest wheat futures contract must necessarily be a fairly small fraction of total wheat hedging in the United States, because total wheat production in the area is only some 10 to 12 per cent of the national wheat crop.[56] Moreover, there is relatively less occasion for hedging in the Pacific Northwest than in most other areas of concentrated wheat production in the United States, because of abundant "country" storage facilities and a widespread disposition of growers to retain ownership of their wheat for considerable periods after delivery.[57] But even so, there could have been a lively business in Pacific Northwest wheat futures if commercial stocks of wheat in that area had not been held to such a large extent either unhedged, or hedged in futures markets of the Middle West, especially Chicago (and in the standard contract there).

Decision of a wheat merchant or processor in the Pacific Northwest to hedge in Chicago futures rather than in a Pacific Northwest futures contract is only a rather extreme example of the sort of decision often made by hedgers—to take inferior risk protection for the sake of a saving in cost. Even though he hedges in Chicago futures, a merchant or processor in the Pacific Northwest can still rely on prices of the Seattle futures for guidance in deciding whether to buy for storage or not to buy.[58] If he buys because the relation between the spot price and a Seattle futures price promises a return for storage, he may still decide to hedge in a Chicago future with only the result that he will take more risk, but not so much risk as though he held the wheat unhedged. In other words, the decision on where to place the hedge concerns only the insurance aspect of hedging.[59]

[55] See data on open contracts in wheat futures, by exchanges, in *Commodity Futures Statistics*, U. S. Dept. Agric., Stat. Bull. No. 107 (1952), pp. 5, 10, and earlier publications in the series.

[56] Opinions differ as to how the "Pacific Northwest" wheat area should be defined, but on any reasonable definition, it does not follow the boundaries of states, which are the units for wheat production statistics; consequently the production of the area can be stated only roughly.

[57] *Cf.* J. S. Davis, "Pacific Northwest Wheat Problems and the Export Subsidy," *Wheat Studies* (Aug. 1934), X, 377.

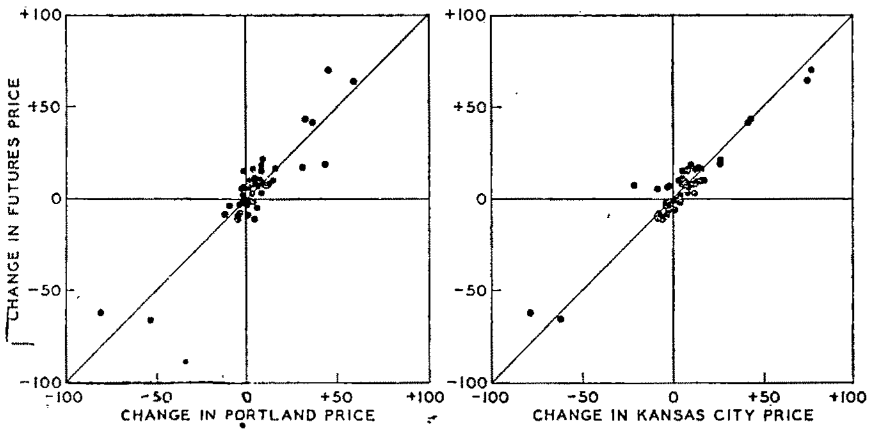
[58] Though of course, if too little hedging is left for the Seattle market, even the guidance afforded by its prices will be lost.

[59] Unless he expects a change in the relation between Seattle and Chicago prices, in which case the hedging problem becomes entangled with one of intermarket arbitrage.

A merchant or processor choosing between Seattle and Chicago futures as the medium for hedging that he has decided to do is in much the same position as though he were taking out casualty insurance, and choosing whether to take full coverage or coverage only for losses above some stated minimum. The choice he makes is whether to take coverage on all insurable risks, at a fairly high cost, or to insure only against serious loss, at a considerably lower cost. The chief function of insurance is to give protection against serious, crippling, loss. Carrying insurance against small losses that occur frequently is ordinarily poor business because the holders of the insurance have to pay the losses,

CHART 1.—RELATIONS OF TWO-MONTH CHANGES IN PRICES OF CHICAGO WHEAT FUTURES TO SIMULTANEOUS CHANGES IN PORTLAND AND KANSAS CITY SPOT PRICES, SEPTEMBER 1946 TO MAY 1952*

(*cents per bushel*)



* Data as for Table I; in each crop year the first change calculated is for July–September (September–November in 1946, when futures trading was temporarily discontinued until late August on account of price controls), and the last price change, for March–May.

through the insurance premiums, and to pay also the overhead costs of writing policies and adjusting losses. Hedging, as we saw earlier, is not ordinarily done primarily for its insurance value, but because it is a logical consequence of the information on which the hedger acts (p. 325). The fact that business risks attending such hedging are very small is none the less a valued consequence of such hedging; and when the costs of hedging in the futures contract logically indicated are excessive, businessmen naturally consider the possibilities of obtaining at least the insurance values of hedging at a moderate cost. The principal insurance value of hedging wheat stocks in the Pacific Northwest is supplied about as well by Chicago futures as by Seattle futures.

This interpretation of hedging deserves empirical support. Is a

TABLE I.—SPOT AND FUTURES PRICES OF WHEAT AND TWO-MONTH PRICE CHANGES, JULY 1947 TO MAY 1948*
(*cents per bushel*)

Date	Chicago Futures[a]		Spot Prices		Two-Month Price Changes		
	Dec.	May	Kansas City[b]	Portland[c]	Chicago Futures	Kansas City	Portland
1947							
July 16	237	...	234	219	....	....	....
Aug. 16	237	...	231	222	....	....	....
Sept. 15	279	...	275	256	+42	+41	+37
Oct. 16	302	...	306	281	+64	+75	+59
Nov. 15	299	286	301	300	+19	+26	+44
Dec. 16	309	296	304	293	+07	−02	+12
1948							
Jan. 16	...	305	311	291	+18	+10	−09
Feb. 14	...	235	235	212	−62	−79	−81
Mar. 16	...	239	249	237	−66	−62	−54
Apr. 16	...	252	249	243	+17	+14	+31
May 17	...	244	240	235	+05	−09	−02

* Prices for that trading day nearest the middle of the month on which quotations are available in all three markets, rounded to the nearest cent.

[a] Means of highest and lowest prices during the day, from Chicago *Journal of Commerce*.

[b] Weighted average of reported spot sales of No. 2 Hard and Dark Hard Winter wheat, compiled by U. S. Department of Agriculture from Kansas City *Grain Market Review*.

[c] Spot prices of No. 1 Soft White wheat, compiled by U. S. Department of Agriculture.

"poor" hedge reasonably comparable with insurance that covers losses above some stated minimum? Or is it more properly comparable with insurance covering only a *fraction* of the total loss; or with insurance carried with a company of uncertain financial status, that may turn out to be no insurance at all? The facts are well illustrated by Chart 1.

The meaning of the points plotted in the chart may be grasped readily by considering their relation to the illustrative data in Table I. The point, for example, that appears at the extreme lower left of each section of the chart, is plotted from the data for "two-month price changes" appearing in the table opposite "Feb. 14." These are price changes from December 16, 1947 to February 14, 1948. Over this two-month interval, the spot price at Portland fell 81 cents; that at Kansas City fell 79 cents; and the price of the Chicago May future fell 62 cents. Despite these severe price declines holders of wheat stocks of the indicated qualities at Portland and Kansas City, hedged in the Chicago future, would have lost only 19 and 17 cents per bushel, respectively.

Points on the diagonal line across the center of each section of the chart represents instances in which the spot and the futures prices

changed equally. Points to the left of this line represent instances in which the spot price fell more than the future price, or rose less. These were instances in which hedged stocks would have been carried at a loss, as in the specific case just considered. Conversely, points to the right of the diagonal represent instances in which a gain would have resulted from the carrying of hedged stocks. Nothing further need be said here about the way in which hedgers use futures quotations to judge in advance when the carrying of stocks is likely to prove profitable, but it is pertinent to note that Table I includes evidence that a hedger anywhere in the Middle West, at least, had reason to expect a loss if he carried stocks of wheat from December 16, 1947, to February 14, 1948. This prospect was indicated by the fact that on December 16 the price of the Chicago May future was 13 cents under the price of the December future.[60]

Amounts of gain or loss from carrying hedged stocks of wheat are indicated directly in Chart 1 by the horizontal (or vertical) distances of the plotted points from the diagonal line. The scatter of the points is greater, and therefore gains and losses were greater, for Portland wheat than for Kansas City wheat, though perhaps not so much greater as some would have expected. But the important fact for present purposes is that the points in the chart cluster as closely around (or are no more widely dispersed around) the diagonal lines near their ends than near their midpoints. There is no evident tendency for gains and losses on hedged stocks to have been larger when price changes were large than when price changes were small. Hedgers take some risks even though they can estimate fairly well the prospective gain or loss from storage, and a good deal more risk on wheat stored in Portland and hedged in Chicago than on wheat stored in Kansas City and hedged in Chicago. But in either case the amount of risk is substantially *independent* of the amount of price change. Hedging limits the amount of risk in substantially the same sense that insurance covering losses above a stated amount limits risk.

In the light of these facts, it is understandable that many hedgers should prefer a "poor" hedge that is cheap to a more nearly perfect hedge that is relatively expensive. The tendency for most futures trading in any commodity to converge in some one exchange, and to concentrate in some one contract there, is explained. There is even an implied suggestion that trading in barley futures, for example, may have died out in the United States because grain dealers chose commonly to

[60] This relation reflected a current high premium on spot wheat over the May future, indicative of prospective declines in spot prices relative to the May future throughout the United States east of the Rocky Mountains, but not necessarily on the Pacific Coast.

hedge their barley stocks in corn futures, at low cost, in preference to hedging in the small and relatively inactive barley futures market, where the costs of hedging were relatively high. And the fact that merchants and processors make such choices does not necessarily indicate that they put a low estimate on the value of hedging. Their valuation of hedging must be judged from cases where the only choice open is to hedge in a market where hedging is expensive, or not to hedge at all. In such cases the common choice is to hedge, as is evidenced by the vitality of small futures markets that have no larger competitor.

VII. *Summary*

To summarize, we began with a definition of futures trading that related it intimately to other commodity transactions, and emphasized economy as its major distinguishing feature. A language problem, we found, has promoted a false idea of contrast between futures trading and other commodity trading. Looking at the bases of futures trading, we saw them to lie more in utilization of the advantages of futures markets by merchants and processors, for hedging, than in the desires of others to speculate.

Hedging we found to be not primarily a sort of insurance, nor usually undertaken in the expectation that spot and futures prices would rise or fall equally. It is a form of arbitrage, undertaken most commonly in expectation of a favorable change in the relation between spot and futures prices. The fact that risks are less with hedging than without is often a secondary consideration. The prevalent tendency to regard curtailment of business risks as the main service of futures markets has diverted attention from their probably more important service of promoting economically desirable adjustment of commodity stocks, thereby reducing price fluctuations. The argument for governmental stockpiling rests heavily on a consequent false appraisal of the causes of price fluctuations.

In further consideration of the subject of price fluctuations, we stated an ideal of behavior of a futures price that permits objective statistical tests, and put in one sentence the gist of conclusions arising from application of such tests to the intraday behavior of futures prices. The statement of conclusions was prefaced by some data on the operations of two professional traders which reveal characteristics far from those usually imagined to exist. Pending further research based on the stated concept of ideal price behavior, inferences on the reasonableness of the larger fluctuations of futures prices, beyond the limits of one trading session, must still rest largely on subjective judgment, but there is considerable evidence that these larger price fluctuations may usually re-

flect substantially accurate appraisals of changing economic facts that should be accompanied by such price changes.

Finally, we inquired into the causes of some puzzling characteristics of futures trading and found them explained by hedgers' responses to cost differentials associated with the "bivalence" of market price. The responses themselves depend largely on the fact that even a "poor" hedge affords good protection of the sort for which insurance is mainly needed. It is like casualty insurance covering losses above some stated minimum.

ECONOMICS OF HIGHER EDUCATION

By SEYMOUR E. HARRIS*

The Commission on Financing Higher Education (hereafter referred to as the Commission) recently released its Report, *Financing Higher Education in the United States* (hereafter referred to as *Report*) and ten research volumes, inclusive of a 500-page Staff Report (hereafter referred to as *Millett*), by John D. Millett, executive director. The Commission consisted of twelve members: college administrators (8), and businessmen and lawyers (4). The executive committee consisted of Messrs. P. H. Buck, F. A. Middlebush, and H. M. Wriston. No economist was included, though the problems were primarily economic, and no nonadministrative faculty member was included.

This Commission has written an important report, for which all should be grateful; and it has made available an abundance of materials which will greatly lighten the tasks of researchers in this field for many years. Both the Rockefeller Foundation and the Carnegie Foundation are to be congratulated for their generous donations for the work of this Commission, which made possible the provision of so much valuable material.

These eleven volumes offer an opportunity to discuss the vital economic issues confronting Institutions of Higher Learning (hereafter referred to as IHL). At the outset, however, we should note some peculiarities of the market for college students. First, many potential "buyers" are excluded from the market. Students have to meet minimum standards (*e.g.*, a high school diploma). Such restrictions limit the number of "buyers" of higher education. Second, buyers are not usually asked to pay the full costs of an education. The effect of "sales" below cost is to increase numbers seeking a college education, though the net effect here is not so great as is commonly supposed (except in medical schools, where a tuition of about $700 per year is to be set against a cost per year of about four times the tuition). For private institutions, the "subsidies" per year amount to about $120 and for public institutions about $260, or an average of almost $200. These sums are large in relation to *educational* costs (one-third of educational costs for private institutions, two-thirds for public), but much less relative to the $1,000 to $2,000 total cost in private IHL and a minimum of $1,000 for in-students at state IHL, plus in each instance the income foregone. Costs for nonresidents are less.[1] Education below cost is offered despite the fact that a college graduate can look forward to an income of $100,000 more than a noncollege graduate and a medical school graduate, $300,000 to $400,000 more.[2]

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[1] Figures calculated from *Millett,* pp. 140, 300-01, 389.

[2] *Cf.* E. Havemann and P. S. West, *They Went to College* (New York, 1952), p. 26, and my article "Why the Government Need not Subsidize Medical Schools," in *The Reporter,* Feb. 5, 1952, VI, 24.

Third, the competition is not primarily a price competition but rather one for attracting the most-qualified buyers, that is, the highest quality students. Fourth, the major costs of education, inclusive of extra costs of living and income foregone, are still borne by the individual, though there is a strong public interest involved.

I. *Symptoms of Financial Distress*

It is generally assumed that IHL are in financial difficulties. The Commission also makes this assumption, and lists as factors accounting for the financial problem: inflation, expansion of services, fluctuating student enrollments, needs for enlarged and modernized plant, and uncertain sources of income from gifts, endowment, and government (*Report*, p. 59). We shall return to these factors.

But actually are IHL in distress? Some statistics do not confirm this. Surely, enrollment does not suggest that IHL are in trouble. Fall enrollment in various years was as follows:

Year	*Enrollment*	*Index* (1939 = 100)
1939	1,364,815	100
1943	733,190 (minimum)	54
1949	2,456,841	180
1951	2,116,440	155

Source: *Millett*, p. 67.

It is not generally held that financial difficulties spring from an increased number of customers. (The decline of 14 per cent from 1949 to 1951 is explained by the reduction in "back-log orders.") The Commission is not too helpful in clarifying the relation between enrollment and financial position. Indeed, they point to the fact that "one-third to two-fifths of expenditures may be required for overhead, student personal services, the library, operation of the plant and other activities" (*Report*, p. 80). As the number of students rises, the apportionment of fixed costs over a larger number should bring about a reduction in costs per student; and on top of a 30 per cent rise of enrollment in the 'thirties, the average enrollment in the years 1946-51 exceeded that of 1939 by two-thirds (calculated from *Millett*, p. 67). In fact, Millett shows that, with rising enrollment, costs increase by but 50 per cent of the additional student charges received, and with declines the IHL profit from a reduction of costs of but 50 per cent of student charges foregone.[3] Moreover, it is shown that average expenditures for administration and general purposes were $183 for liberal colleges with enrollment of 500 or less and $118 for those with enrollment of 2,000 or more (the relation of size and costs is an inverse one throughout). "As a general proposition it seems fairly evident that large enrollments are economical as far as expenditures per student are concerned" (*Millett*, p. 175). Moreover, the large rise of enrollment is mainly concentrated on a relatively unchanged number of institutions. Should we leave the junior college out, the increase in numbers of IHL from 1940 to 1950 was but 4 per cent, and with junior colleges included, 12 per cent (*Millett*, p. 103).

[3] Undoubtedly, this oversimplifies the problem. *Cf. Millett*, p. 272.

Hence I conclude that, however difficult planning becomes with uncertain enrollment, the Commission has not proved its point that fluctuations in enrollment account for financial difficulties—unless IHL unwisely expanded capacity irretrievably in response to the veterans' bulge, which generally was assumed to be temporary. (There was some evidence of great pressures felt by *liberal* colleges to increase commitments in response to higher enrollment in the early postwar period.) Perhaps a more accurate way to put this point is that IHL would fare better with stabilized (or better, steadily rising) enrollment, but any financial problems raised by past fluctuations in enrollment have been *more* than offset by the rise in enrollment, accompanied by a reduction in costs per student, the result of economies of scale.

Before leaving this point, I should add the following, lest my position be misunderstood: First, I am not discussing now the problem of inflation, which, of course, raises costs per student in dollars. Second, it is possible that a rise of enrollment of, say, 50 per cent raises problems of new plant and personnel which may put an increased burden on IHL. (I am reminded of the rise of traffic on the railroad which requires a new track.) In the postwar years, however, the construction of new plant was only to a small extent based on expectations of continued enrollments at the peak 1948 level. Third, as student enrollment rises, the contribution of past accumulations of capital or even of current gifts, declines per student. This means that greater recourse has to be had to student fees or public aid. But it also means that for every rise in enrollment, the contribution of additional student income increases relative to costs.

The conclusion is that in the postwar years IHL gained from the rise of enrollment in that costs per student did not rise as much as revenue per student. Where, however, student revenues are small in relation to additional costs per student (*e.g.*, medicine), large losses result from increased enrollment.

What then is the evidence of financial difficulties for IHL? Clearly the rise of enrollment should not raise serious problems, for it is clear that with that rise marginal revenue exceeded marginal costs. Nor do the income statements of IHL suggest serious problems as of today. Thus, in 1950 income was estimated at $2,182 million and expenditures at $2,069 million. The excess of receipts on current account was greater than in 1940 or 1930, though not on a percentage basis. One may ask why, in view of these summary figures, there is so much public discussion of the colleges being in the red. The answer seems to be partly that many private IHL include as receipts only student payments and returns on endowment, with the result that substantial deficits are shown. Gifts, of course, make up the difference. "For fund-raising purposes some college administrators prefer to show the 'deficit' as an encouragement to their campaign for gifts" (*Millett*, pp. 282-83). So far the evidence of distress is unsupportable. But we shall show that IHL face serious problems nevertheless.

Inflation is one of the important causes of financial difficulties. Rising prices hurt, because receipts often do not respond to the rise of costs. According to a crude price index, constructed with the aid of Professor George Stigler, the prices paid by IHL had risen by 7•.2 per cent in 1950 vis-à-vis 1940 (*Millett*, p. 116). (This is about 4 percentage points more than the rise in the consumers price index.)

In response to inflation, student fees have not risen *pari passu*. On the basis of figures for enrollment and tuition fees given by Millett, I estimate the rise of tuition by 1950 at 50 per cent, or about two-thirds the rise of prices. Here is a loss to be associated with inflation; for fees are the most important single source of revenue for private institutions, and the second most important for public IHL (*Millett*, p. 297).

This is not, however, a full statement of the situation created by inflation. The Commission devotes much space to the inflation of costs; but in all fairness they should have concentrated equally on the rise of income of the nation. To some extent the rise of income reflects the inflationary process, both the rise of prices and the effects of that rise on output; and to some extent higher income reflects the increase of output associated with gains of employment and productivity not related to inflation. *Nevertheless, the fact is that if inflation is a handicap, the rise of money income is a boon.*

This rise of income largely explains the increase of budgets of IHL from $624 million in 1940 to $2,068 million in 1950 (*Millett*, p. 280). This rise, it should be noted, even exceeded that in national income. Against an increase of prices of 75 per cent, IHL increased their revenue by 230 per cent. Though fees per student rose by substantially less than costs, the rise of enrollment and other income associated in part with the gains of national income made possible the vast income gains of IHL. To present a full picture we should consider both inflation (a cost factor) and rising national income (a receipts factor).

Is there, then, any evidence of financial distress, or at least of inadequate resources? One symptom is the larger part played by tuition in total costs. In private universities, tuition accounted for 46.7 per cent of all educational income; in private liberal arts colleges, 71.7 per cent; in private professional schools, 46.1 per cent. From 1940 to 1950, student fees in private IHL rose from 57.7 per cent of all educational income (adjusted) to 67.8 per cent; and in public IHL, from 22.5 to 29.8 per cent (*Millett*, pp. 292, 300-01).

It is unfortunate that student fees constitute a rising percentage of income; first because, as the Commission observes, this makes IHL too dependent on a source of revenue that varies with enrollment. The effects on competition for students in debasing of standards is obvious. Second because the increase in fees is an antidemocratic element in higher education. (We shall return to this problem later, when we discuss enrollment and alternative methods of solving financial problems.)

Before we leave this aspect of the problem of tuition, we should emphasize one point. The gains of students from a reduced tuition fee in *real* terms over the period of 1940-50 should be contrasted with the increased *real* tuition fee from 1930 to 1940. A comparison of 1930 and 1950 might in many ways be a more appropriate one than that of 1940 to 1950. In fact, from 1913 to postwar, there is much evidence of a substantial rise in the "real" cost of higher education.[4]

A second symptom of financial distress, or at least of inadequate resources,

[4] *Cf.* my *How Shall We Pay for Education* (New York, 1948), pp. 173-81.

is the pay of faculty members. A college is no better than its faculty. Badgered by higher costs for supplies, construction, nonfaculty salaries, etc., the IHL respond by squeezing its faculty. In general, the result is bound to be felt in the quality of men and women drawn into teaching, a result that is furthered also by the increase in work load.[5]

The Commission shows that salaries in IHL have risen much less than in other occupations. Whereas, on the basis of a substantial sample, average academic salaries in public universities were 2.21 times full-time earnings of all employees for the country in 1940, they were but 1.43 times in 1950. This is aside from the gains resulting from reduced unemployment in industry (*Millett*, pp. 274-75). Actually, except in land-grant colleges, pay rose substantially less than the cost of living (50-60 per cent against a rise in the cost of living of 72 per cent).[6] The rise of pay has been small compared to that of other professional groups. This rise of 50-60 per cent should be compared with one of about 150 per cent for physicians, 100 per cent for dentists, of almost 100 per cent for lawyers.[7] Again, we make one reservation: that the reduced economic status of faculty members is greater if comparison is made with 1940 than with 1930.[8]

Should faculty salaries be raised by 25 per cent, the gain over prewar would roughly be 100 per cent; and the average increase would approach that of other professions except for medicine. For the $708 million of departmental instructional outlays in 1950, this would involve an additional outlay of close to $200 million, or more than $1,000 per faculty member (there were 155,000 faculty members in 1947). The $200 million figure also allows for higher salaries in library, extension, and research. This increase of 25 per cent would seem to be a minimum as a condition for fair competition with the other professions and business. It makes no allowance, of course, for any later doses of inflation.[9] I might add that, in 1948, I estimated that an increase of faculty salaries in *private* institutions which would put them in the same relative position as other members of the labor market would require $200 to $225 million additional per year. At that time, faculty salaries *relative* to income in the economy had been reduced by 40 per cent in real terms.[10]

[5] See, for example, *Higher Education for American Democracy: Report of the President's Commission on Higher Education*, hereafter referred to as *PC* (Washington, 1947), IV, pp. 51-52. Here it is noted that teaching burdens are heavier than before the war.

[6] *Millett*, pp. 131-36; *cf.* also S. E. Harris, "Professional Salaries and Tuition, 1947-48," *Bull. Am. Assoc. Univ. Professors*, Spring, 1948, XXXIV, 98-109.

[7] *President's Commission on Financing of Health Services*, Preliminary, Table D-33, (Washington, 1952).

[8] It should be observed that all estimates of average salaries are subject to one important reservation: the proportion of members of different grades or age group varies. Thus, in 1950, there was a much larger proportion of young members and hence the rise was more than it seemed to be; but the percentage rise varied inversely with rank.

[9] For budgetary figures and number of faculty personnel, see *Millett*, p. 118, and *PC*, VI, pp. 38-40.

[10] "The Future of Higher Education in the United States," *Harvard Educational Rev.*, Fall, 1948, XVIII, 202.

Still another indication of financial difficulties is given by an examination of outlays per student:

EXPENDITURES PER RESIDENT STUDENT, 1930, 1940, 1950

	1930	1940	1950
Instructional Expenditures—in Current Dollars			
All Institutions	$217	$189	$300
Educational and General Purposes—in 1940 Dollars			
All Institutions	289	291	277
Universities	291	319	292
Liberal Arts Colleges	284	292	253
Professional Schools	299	277	281
Junior Colleges	230	171	240

Source: *Millett*, pp. 116–140.

In dollars of stable purchasing power, the outlays per student have tended to decline since 1930 and especially since 1940. The reductions are especially large since 1940 for liberal arts colleges. These figures in themselves do not necessarily mean a debasement of standards, for account must be taken of (1) the economies of scale associated with the rise of enrollment and (2) the exploitation of faculty members. Yet it is significant that in a period when real per capita income (even after taxes) had risen by almost 55 per cent, the real outlays per student actually declined. That the number of resident students from 1940 to 1950 per full-time faculty member rose from 11 to 12 and for liberal arts colleges, from 13 to 15, points to less effective teaching (*Millett*, p. 130). The status of the physical plant, to which we now turn, is also relevant.

PLANT OF IHL, VALUE AND COST OF OPERATION, 1930, 1940, 1950

	Plant Value ($ million)			Plant Operation and Maintenance ($ million)	Plant Operation and Maintenance per Resident Student ($)
	All Plant ($ million)	Public[a]	Private[a]		
1930	2,053	882	1,056	57	58
1940	2,754			63	47
1950	4,800	2,642	1,848	201	85

[a] Included here are only universities, liberal arts colleges, professional schools, and teachers colleges.

Source: Calculated and compiled from *Millett*, pp. 165-66, 256-57, and *Report*, pp. 86-87.

The reader will observe that from 1930 to 1950 the rise of plant value has

been more than twice as great for public institutions as for private; that costs of plant operation and maintenance have risen by 2½ times as against a rise of ½ times in cost of operation per resident student and a rise in total value of less than 1½ times.

All conclusions drawn from these figures are subject to serious reservations; for there is little indication of how plant is carried on the books: original cost? replacement value? (The *PC* estimated replacement value at $4 billion in 1947.)[11] Nevertheless, we note that maintenance and operation expenses have risen about three times as much as the cost of consumer goods. The explanation lies partly in the large rise in the costs of the relevant types of labor; in the increase of plant; in the deferred maintenance associated with the war.

The general view seems to be that plant is too old and inadequate for the job to be done. The U. S. Office of Education has estimated construction needs until 1960 at $5 billion; the *PC*, at $8.3 billion (assumption of 4½ million enrollment and re-establishment of prewar space per student); the Commission, $3.6 billion (assumption of 2½ million enrollment and 1948-1949 prices; at present prices, the amount would be in excess of $4 billion).[12]

Even if the needs are put only at $4 billion, it may be concluded that the financial burden would be great. The sum involved seems to be equal to the replacement cost of existing plant; and the outlays per year about 20 per cent of all expenditures for higher education per year. They may well point to serious financial problems for IHL.

Undoubtedly, the financial problems of IHL are serious; and that despite the fact that the Commission has allowed inadequately for the effects of rising incomes. In particular, the reduction of the significance of endowment income and gift income generally (more on this later), the failure of instructional incomes to rise sufficiently to match incomes of competing employments, the failure of real outlays per student to keep up with the gains of the economy, the unfilled needs for construction, the threat to enrollment associated with security—all these point to financial embarrassment, or at least serious problems.

The crucial problem is how can expenses be cut or income increased. On the former, the Commission makes a notable contribution. All kinds of possible economies are suggested and wastes pinpointed (especially *Millett*, pp. 123-30, 167-72; *Report*, 96-99, 105-13).

II. *How to Increase Income*

The major suggestions of the Commission are to obtain more money from business, especially from corporations, and from state governments. It is not easy to pierce this problem because the figures are presented in such a way that the contribution of each source of income is not clear. *Millett* (p. 292) gives a breakdown, not for all institutions, but for each of four groups. From *PC* and Chapters 15 to 19 of *Millett*, I piece together the following:

[11] *PC*, V, p. 18.

[12] *Millett*, pp. 259-63; *PC*, V, pp. 20-21.

PERCENTAGE OF EDUCATIONAL AND GENERAL INCOME FROM SOURCES INDICATED, ALL INSTITUTIONS' COMMISSION ESTIMATE, 1950; *PC* ESTIMATE, 1960*

	Commission Study[a]	*PC* Estimate[b]
Student Fees	29.8	17.3
Endowment	13.9	8.7
Benefactions	6.2	
Federal Government	27.9 (12)[c]	33.0
State and Local Government	55.2 (38)[c]	39.6
	131.0	98.6

[a] Expenses, $1,677 million.
[b] Percentages estimated on basis of 4.6 million enrollment for 1960. Estimated expenses (operating only), $2,587 million.
[c] Corrected figure.
* Source: *Millett,* p. 292 and Chs. 15-19; *PC,* V, pp. 42, 48.

Even if the Federal Government percentage is corrected to allow for the fact that outlays by the Veterans Administration are included in Student Fees, the Commission figure still adds up to 115 per cent. Probably the difference between 115 and 100 per cent is accounted for by the exaggerated allocation to state and local expenditures. (Part of these outlays are not available for educational purposes.) I have therefore put in brackets corrected figures.

As we shall see later, the *PC* estimates understate the contribution of government; for excluded here are proposals for scholarships and capital outlays. Federal outlays then rise to 47 per cent of the $4.3 billion encompassed, and the percentage contributed by the others declines.

A. Student Fees

Let us consider each of the sources of revenues in turn. Although its position is not stated too clearly, the Commission seems opposed to large increases in tuition fees. One reason seems to be that the private institutions are confronted with the competition of public institutions. A second, the unwisdom of depending too much upon an unstable form of income, unstable because of the dependence on enrollment. A third reason is the democratic argument: education must not be made too expensive for the deserving but poor students. The Commission, on the other hand, does point to the much larger proportion of families that now come within the income group able to pay the costs of higher education (*Report,* pp. 133-34).

I wish that the Commission had been bolder in its recommendations. Do not charge according to the cost of the program. Correct. But why not charge according to the gains to be obtained from higher education? That is, on the assumption that these gains are reflected in the later income of the college graduate, why not require that each college graduate and professional school graduate pay a share of the full cost of higher education that will be proportional to his ability to pay in college years and after? In the years of education the poor student would presumably pay nothing, the wealthy student would

pay the full educational costs over four years (say, $1,600), or even somewhat more (see below), and the average student perhaps $800. According to economic conditions and as the IHL gradually accumulate funds from graduates who pay the difference between costs and undergraduate payments while at IHL, the proportion of the $1,600 paid in college years could be reduced. After graduation, each former student would continue to make payments over the earning years, but the size of the individual's payment would be a percentage of his income—the average percentage being so determined that the total sum thus collected from all graduates over a number of years would suffice to pay the total cost of their education, less what they paid as undergraduates and less any scholarship aid made available to the impecunious and able. Each graduate would pay the same percentage with the reservation that there would be a ceiling on the total amount paid. A wealthy alumnus would then be required to pay more than cost, but the excess would be an insurance premium to offset losses resulting from premature deaths, low incomes of some graduates and defaults on the part of others. A student who paid nothing during his college years would of course be required to pay a larger percentage than the student who paid a large part of costs inclusive of the insurance premium during his college years. Thus the individual with an average income during and after college might pay the full cost of his education, those with incomes above the average would pay more, and those with small incomes during college and after would pay little. I should like to see this proposal applied to both public and private institutions, with the result that pressures of state legislators and unfair competition of public institutions would be reduced.

Medical school graduates would be required to pay about $12,000 plus $1,600 for the A.B. (Perhaps $3,000 would be paid during educational years.) Thus, the sum involved in posteducational payments would be about 2 per cent of the lifetime income (about $500,000) of the average physician. Incidentally, the federal government in taxes remitted might well pay one-third of this cost, as the payment may be classified as a gift. (The obligation would be a moral one, and the rate might be increased slightly to cover deaths, failures to pay, etc.)

But let us consider the difference in approach of the *PC* on the one hand and the Commission on the other. It will be recalled from the preceding table that 30 per cent of all income came from student fees in 1950. The contrast in approaches is suggested by an examination of the 1950 distribution of income and proposed income for 1960 under the plans of *PC*, with anticipated enrollment of 4.6 millions. Despite a doubling of enrollment, *PC* calls for students contributing but 17 per cent of the $2.6 billion involved, whereas the actual contributions in 1950 were 30 per cent of $1,677 million. Since the Commission is seeking to raise income by a few hundred million dollars and is concentrating its attention primarily on business and state government as sources of new revenue, the conclusion may be drawn that the proportion to be provided by tuition under the Commission's proposals might fall a little but not rise.

The contribution of tuition depends in part upon the enrollment and in part

upon policy issues. Here, then, is a striking contrast between the Commission and *PC*. Whereas the Commission is inclined to restrict higher education to a limited number, on the grounds that those should have it who can profit by it, *PC* is much more disposed to open the gates wide. Whereas the Commission seems to put the appropriate number at 25 per cent of the college age population, *PC* would welcome 49 per cent through the fourteenth year (sophomore year or junior college) and 32 per cent through advanced liberal or specialized professional years.[13]

The difference in approach toward enrollment is also reflected in student charges. *PC* emphasizes economic disabilities as the explanation of loss of talent and limitation on numbers. Hence the small dependence on tuition. The Commission, basing itself on a valuable study made for it by B. S. Hollinshead *(Who Should Go to College)*, draws attention to noneconomic motivation. Of the top 25 per cent on the basis of intelligence tests who might go to IHL, only 40 per cent actually do, and of these 40 per cent only one-half graduate. In other words, but one-fifth of those who should profit from a college education actually attain it (*Report*, p. 49).

B. Government Contributions

Perhaps the main contrast in approach between these two reports is that which appears in their attitude towards contributions from the federal government. It will be noted that, in 1950, contributions of the federal government (exclusive of Veterans Administration) accounted for 12 per cent of the total income of IHL, and that *PC* plans called for 33 per cent. In fact, the total amount was presently to be $850 million (the counterpart of the 33 per cent) and substantial additional amounts for construction, scholarships, and fellowships. *PC* would have the federal government contribute money for scholarships, fellowships, operating expenses, and research. In contrast, the Commission is against any extension of federal aid, not even for scholarships and fellowships.

The members of this Commission seem genuinely fearful of the federal government. Despite the fact that they found no abuses in the British system of subsidies,[14] only one attempt at appointment control under the subsidy program to agricultural colleges (a study for the Commission), fine cooperation in federal grants, a willingness to concentrate research grants on institutions best fitted to carry the research through—despite all of this the Commission warned against any extension of federal aid. These conclusions seem to derive from a fear of federal control, and from an unwillingness to encourage further extension of federal activities.

Undoubtedly, the Commission fears government more than business; for it appeals to business to provide the main part of the few hundred million dollars

[13] *PC*, I, p. 41. *Cf.* my *The Market for College Graduates* (Cambridge, 1949), where I have discussed some of the issues raised by enrollments suggested by *PC*. Unfortunately, the Commission paid scant attention to this important problem.

[14] Studied in a separate volume for the Commission, H. W. Dodd, L. M. Hacker, L. Rodgers, *Government Assistance of Universities in Great Britain*, 1952.

additional required each year. Distrust of the federal government is especially germane in these days of investigations. But, as Hofstadter so well shows, there are also issues involved in the relation of IHL and its alumni and trustees.[15] It is important, as the Commission suggests, not to be dependent excessively on any one interest.

If the Commission is too coy vis-à-vis the federal government, the *PC* would strain the federal budget too much. Even before the Korean War, it would be hard to justify the additional federal outlays for higher education proposed by *PC*. What is more, the implications of *PC*'s proposals are a steady growth of public as against private IHL. In fact, since the funds would be made available primarily to public institutions, the enrollment in public institutions would rise to 80 per cent of the total by 1960, as against little more than 50 per cent in 1950.

Actually, the total contributions proposed for the federal government by *PC* are much greater than is suggested by the table above. In all, the federal government was to provide $844 million for general expenditures (as indicated by the table), $217 million for capital, and $1,000 million for scholarships and fellowships, or $2,061 million in all. On top of this, state government was to provide $1,000 million (as indicated in the table) and 433 million for capital. The total of all expenditures for higher education then rises to $4.3 billion. These amounts are, of course, out of the question at this time and were much beyond the practical even when proposed in 1947.[16]

It is scarcely necessary to add that the proposed burden on state governments would be intolerable. In 1951, total expenditures of state governments amounted to $15.1 billion.[17] Inflation, large tax drains of the federal government, and the growing distress of local governments excessively dependent on the general property tax have greatly strained state finances. In that year all expenditures of state governments for state institutions of higher education were $1,166 million. Of this total, $656 million were spent on current operation other than capital outlays.[18] This figure greatly exceeds the $445 million made available to public higher education in 1950 for current operation, the total given by *Millett* (p. 325), and hence includes some extraneous items. At any rate, an increase of current outlays from about $500 million to $1,000 million and of capital outlays from $289 (1951 total) to $433 million would almost double total outlays and raise state outlays for *all* purposes by 4 per cent. An increase of, say, 10 per cent of current and capital outlays (½ of 1 per cent of all outlays), however, is conceivable, and this might yield $75 million additional.

Both *PC* and the Commission suggested that charges of about 40 per cent

[15] R. Hofstadter and D. C. Hardy, *The Development and Scope of Higher Education in the United States,* 1952 (a Commission volume).

[16] See *PC,* V, pp. 36-42, and VI, p. 49. Also *cf.* my full discussion in "The Future of Higher Education in the United States," *loc. cit.*, pp. 198-207.

[17] U. S. Department of Commerce, *Compendium of State Government Finances in 1951,* p. 8.

[18] *Ibid.*, p. 33.

of all income would overburden state and local governments. Indeed, the Commission recognizes the problems faced by state government, inclusive of the arrogation of major tax revenues by the federal government, the general rise of taxation, the pressure to increase outlays in other directions than education, in part because of the matching of some of these outlays by the federal government (*Report,* pp. 142-48).

C. Gifts and Endowment Income

With increased dependence on government aid ruled out by the Commission (with the exception of what state governments might spare), the only other important alternative for the Commission is greater dependence on gifts. The Commission recognizes that the inflation has wiped out a large part of the endowment. In fact, a combination of increased enrollment, higher prices, and reduced interest rates has reduced the contribution of endowment income per student; and higher taxes and the increased competition of other funds (*e.g.,* community chests, Red Cross, hospital, war) have resulted in a substantial reduction of the share of the Gross National Product going to IHL in the form of gifts in recent years as compared with the proportions received in 1900-1930.[19]

A measure of losses suffered is given by the fact that over a decade, the *value* of endowment in real purchasing power declined by about 50 per cent, or $750 million; and endowment *income* in real terms declined by 50 per cent, despite a rise in dollar amount by $700 million, or one-half. The percentage of educational income obtained through private benefactions was 5.6, 6.6, and 6.2 per cent of educational income in 1930, 1940, and 1950, respectively; but in real purchasing power per student there was a decline from 1940 to 1950 (*Millett,* p. 336). Endowment income as a percentage of *educational* income of private IHL actually declined from 31.2 per cent in 1930 to 25.5 per cent in 1940 and to 13.9 per cent in 1950. The contribution per student in real purchasing power has declined by about 60 per cent (cf. *Millett,* p. 307). The effects would have been much more serious had not the IHL shifted a substanial part of their investments from fixed interest bearing assets to common and preferred stocks and bonds. The resulting gains may, of course, prove illusory should a serious depression or a decline of values ensue. IHL have also profited from the development of a productive program of annual giving. But in general the annual contribution from gifts and endowment income are relatively much less important than they were twenty years ago.

In the light of this background, it is well to consider the major recommendation of the Commission, namely, that business corporations might be asked to contribute $250 million annually to IHL. It will be recalled from our earlier table that the actual contributions from endowment (13.9 per cent) and benefactions (6.2 per cent) were 20.1 per cent as against the contribution of 9 per cent from these two sources proposed by *PC* for 1960.

In 1950, the corporations contributed about $250 million in gifts of all

[19] For a discussion of some of these issues, see my *How Shall We Pay for Education?* (New York, Harper & Brothers, 1948), pp. 133-61.

kinds, of which IHL received 17 per cent, or about $45 million. All gifts were about 0.61 per cent of corporate income before taxes (*Report*, pp. 168-69). The actual cost to the corporation and the stockholders (assuming *ultimate* distribution of all income and unchanged taxes) was about 0.15 per cent of corporate income, with the federal government contributing the remainder through tax remissions. Additional gifts to IHL of $250 million would, therefore, involve a cost to the corporations and their owners of but $60 million, or roughly 1/10 of 1 per cent of corporate income before tax. The case for increased gifts is indeed strong, especially when consideration is paid to the direct and indirect contributions of IHL to the income of corporations.

But there are obstacles. Although corporate giving has increased by ten times since 1936, this rise is relatively little more than the gain in corporate income. Legal obstacles are important, though these are gradually being overcome. The experience of the medical schools in a well organized campaign is significant. This group raised but $3 million *in all* over several years, whereas the additional funds required by medical schools probably exceed $40 million per year.

Finally, the question as to the price to be paid has to be considered. In response to the plea made by the Commission, *Barron's*, in a lead editorial Jan. 1, 1953,[20] has replied to IHL that their financial trials are of their own doing; that their professors are responsible for full employment policies, inflation, higher taxes and controls; and that, if they want to prove themselves worthy, they had better dismiss their leftist professors. The editorial in *Barron's* does not, I hope, represent the general attitude of business. In fact, as President Conant said in his 1952 report, the *great* business benefactors have not set conditions. But it is also clear that as IHL seek for more funds from special interests, they may increasingly be pressed to yield control over educational policies.

Conclusion

IHL are in need of additional resources. The case for increased income rests on the failure to improve the quality of higher education in proportion to the over-all rise of material resources and standard of living; on the large relative deterioration of the economic status of the faculty; on the need of not relying excessively on tuition paid during school years; on the effects of higher taxation, inflation, lower yield on capital, and the rise of enrollment on the contribution of endowment and gift income per student.

The crucial issue is where to obtain additional resources. Whereas the Commission, fearing the federal government, urges greater dependence upon business and continued high tuition from students, the *PC*, impressed by the relation of economic resources to attendance at IHL and sympathetic to the extension of government aid, would rely on the federal government primarily and state government secondarily. The difference in approach rests partly on the fact that the Commission weights more heavily than the *PC* the noneconomic factors accounting for nonattendance at IHL, and also is more

[20] *Cf.* my reply, Jan. 29, 1953.

disposed to deny entry to IHL to those who might only depress standards. Those who are fearful of interference by both government and business, may find my suggestions for financing higher education congenial. This proposal would require the student to pay the entire cost of his education over his college and working life.

May I end by saying that the Report and the supplementary volumes are the most important study of the economics of higher education yet made available. No one interested in these problems can afford to neglect these volumes.

COMMUNICATIONS

Elementary Algebra and the Equation of Exchange

During the six years since the close of World War II, twenty textbooks in the field of money and banking or money and business activity by American economists have been published.[1] With one exception, these books refer to the equation of exchange in discussions of the interrelationships of such concepts as the quantity of money, its rate of use, the level of prices, the quantity of goods and services sold, and the money volume of transactions. In all nineteen books, the equation is written in the traditional form, MV = PT, or in an equivalent form.[2] This appears to be an algebraic equation of the type $xy = wz$, or $x = \frac{wz}{y}$. However, if a reader attempts to treat the equation of exchange, with the definitions of the terms as they are given in these books, as an algebraic equation, and to substitute true numerical values (or approximations to such values), various difficulties turn up which ought not to appear when using a simple algebraic equation.

In two of the nineteen books it is pointed out that the term PT is a substitution for the term Σpq. However, in both cases the equation is developed in a form which attempts to add nonhomogeneous quantities, or measure a "meaningless heap," to use an expression of the late Professor Schumpeter.[3] Of the seventeen books in which the expression PT, but not Σpq, is used, two define P as an index number with an unspecified base, while treating the other three elements in the equation as absolute quantities. In two books, both P and T are defined as index numbers, with M and V absolute quantities. Any attempt to insert numerical values in the equation MV = PT by using these definitions and index numbers with a base of 1 or 100 (which are the only bases in common use) gives the absurd result of a figure of several hundred billions being equal to a figure of a few tens of thousands, or smaller.

[1] Books by persons from other countries now teaching in the United States are included. A list of the books may be obtained from the author.

[2] By "equivalent" form I mean a form which differs from MV = PT only by the use of other symbols for one or more of these four letters, or by the shifting of one or more of these four elements to the other side of the equation by using its reciprocal.

Some of the authors retain Fisher's distinction between currency and its velocity (MV) and bank deposits and their velocity (M'V'). This distinction will be ignored here; that is, M refers to all forms of money used as circulating medium, and V to the average velocity (number of uses per time period) for all transactions, or for purchase of final products.

[3] Joseph A. Schumpeter, *Business Cycles* (New York, McGraw-Hill, 1939), p. 484. The general concept of an assorted lot, or heap, of goods and services does, of course, have meaning, and so do the concepts of larger or smaller applied to two or more such heaps. However, quantitative measurement of such a heap, for use in mathematical formula, is without meaning unless a common unit of measurement, applicable to all the items in the heap, is specified.

To avoid a fallacious result, one of the books specifies that P, the index number of the general price level, represents the average price paid for the various goods and services, and that T is an index number of quantities with the unit of measurement of each class of goods a dollar's worth of that class in a base year. Two other books which do not refer to P and T as index numbers use the same procedure. While this procedure works out correctly, it is impossible to apply to factual data because it would require complete coverage and a knowledge, for every item, of the physical quantity which sold for a dollar in the base year. The basic methodology of index numbers, that of sampling, weighting, and expression of the results in the form of relatives to 100 for the base year, cannot be used; and the results of the procedure cannot properly be called index numbers.

Of the remaining books, one has no definition nor description of P and T, merely stating that the PT factor is the all-inclusive sum of money transactions in the period and may be subdivided into its parts. In all the others the phrases used in defining both P and T are ambiguous, and some of them are subject to the "meaningless heap" censure. In none of these cases would it be possible to find numerical values to fit the definitions without additional specifications, *i.e.*, without altering the definition.

In thirteen of the books, the equation, MV = PT, is described as a "truism" or "identity." With the ambiguous or inconsistent definitions used, this is not necessarily true: some of them, in fact, lead to false and absurd results when applied to numerical data. Moreover, only two of the books point out that for any time period payments for things (MV) are not precisely equal to the sum of the values of those sold (Σpq), because of debts carried over the ends of the period.

The reason for most of the inconsistent and inadequate definitions of the terms of the equation of exchange appears to be the general acceptance of the expression PT for Σpq. As indicated above, the latter term is not used in seventeen of the textbooks. Of the two authors who use both expressions, neither points out the important fact that the latter term cannot accurately be represented by the former. This obvious fact had been mentioned by at least one previous author of a money and banking textbook, Harold Reed. "Technically, of course PT is bad mathematical terminology. T refers, usually, to many commodities, to cloth, to corporate securities, to iron, to house rents, to labor. There is no homogeneous unit of T. It is impossible to add coal to cloth to corporate securities to iron to rents to labor."[4] Schumpeter had also emphasized the ambiguity and lack of meaning of expressions such as "the price level" except when defined in terms of the relative magnitude of Σpq for one period compared with another period, with an unchanged collection of goods and services.[5] Inasmuch as Reed's book was published four years earlier, and Schumpeter's seven, than any of the nineteen postwar texts on money and banking, it would seem that later writers might have taken a cue from them and avoided the ambiguous and inaccurate terminology.

[4] Harold L. Reed, *Money, Currency and Banking* (New York, McGraw-Hill, 1942), p. 144.

[5] Schumpeter, *op. cit.*, pp. 451-56.

All the authors use the equation of exchange in discussing changes in the value of money, or level of prices, over time. This implies an application of the equation of exchange to successive time periods. However, none of the authors develops the equation in a suitable form for this purpose, though this is easily done with very simple algebraic manipulations, starting with the correct form of the equation for a particular time period, $mv = \Sigma pq$.[6] The procedure is to use subscripts, o for the base year and i for later years ($i = 1, 2, \ldots$); then, since both sides of an equation can be divided by the same quantity (represented by either side of another equation), to write

$$\frac{m_i v_i}{m_0 v_0} = \frac{\sum p_i q_i}{\sum p_0 q_0}.$$

In this form both sides of the equation represent the relative aggregate value in the year i, in comparison with the base year, of the transactions to which the equation is applied. The money-velocity side of this equation can be rewritten in the equivalent form $\left(\frac{m_i}{m_0}\right)\left(\frac{v_i}{v_0}\right)$, *i.e.*, as simple relatives of the quantity and velocity of money. On the price-quantity side of the equation, we can multiply both numerator and denominator by the same quantity, selecting either $\Sigma p_i q_o$ or $\Sigma p_o q_i$. We then have

$$\frac{\sum p_i q_i}{\sum p_0 q_0} \cdot \frac{\sum p_i q_0}{\sum p_i q_0} = \left(\frac{\sum p_i q_0}{\sum p_0 q_0}\right)\left(\frac{\sum p_i q_i}{\sum p_i q_0}\right),$$

which is the Laspeyres formula for a price index with a Paasche formula for a quantity of goods and services index; or

$$\frac{\sum p_i q_i}{\sum p_0 q_0} \cdot \frac{\sum p_0 q_i}{\sum p_0 q_i} = \left(\frac{\sum p_i q_i}{\sum p_0 q_i}\right)\left(\frac{\sum p_0 q_i}{\sum p_0 q_0}\right),$$

which is the Paasche formula for a price index and the Laspeyres formula for the quantity index. If we do not like the combination of a price index which uses weights of the base year and a quantity index which uses weights of the current year, or the reverse combination, we can substitute for both indexes the formula recommended by Bowley more than a half-century ago, and later called by Fisher the "ideal" formula.[7] Other formulas may also be used. In each case the algebraic manipulations by which the chosen price index formula is introduced into the equation will provide a corresponding formula for the quantity index.[8]

[6] Lower-case letters are used here for the money-velocity side of the equation, as well as the price-quantity side, so that the capital letters can be used for the index number form to be developed.

[7] The simplest way of showing that this substitution can be made is to make it and then simplify the result, which will reduce to the original $\frac{\Sigma p_i q_i}{\Sigma p_o q_o}$.

[8] For an excellent brief discussion of various index number formulas and their origins see the article, "Index Numbers," by C. M. Walsh, in *Encyclopædia of the Social Sciences* (New York, Macmillan, 1932), VII, 652-58.

With the foregoing we can write MV = PT, defining all four of the terms as indexes to the same base, with M and V ordinary relatives and P and T index numbers based on the "ideal" formula or on some other selected pair of formulas. For practical application, price and quantity index numbers based on formulas which are not properly paired with each other, mathematically, may be used as approximations; even those derived by use of the "ideal" formula will also be approximations because of computation from samples rather than the whole universe of transactions to which the equation is applied.

There is another form of the equation of exchange, closely related to the foregoing, which is also of great use in dealing with the central problem of monetary economics, namely, the relation of the price level and monetary policy to business fluctuations. This form may conveniently be written $M_tV_t = P_tT_t$, with the terms defined as trend-adjusted index numbers, or percentage ratios to trend, and with the trends appropriately selected and interrelated. Selection of the trends is as follows: for T, the average rate of growth in output or physical volume of transactions over a substantial period of time (several "business cycles"); for V, the reciprocal of the average rate of growth (positive or negative) in holdings of cash balances (money) relative to aggregate expenditures for the type of goods and services included in T, also over a period of several "business cycles"; for P, none, on the ground that neither a falling nor rising price level is characteristic of a stable economy; and for M, the combined average rate of growth in output and in cash holdings relative to expenditures, on the ground that this is the rate of growth in the quantity of money needed for maintenance of economic stability, or maximum production, minimum unemployment, and a stable level of prices.

In view of the usefulness and simplicity of derivation of the index number and trend-adjusted index number forms of the equation of exchange, it is difficult to understand why monetary economists and economic theorists generally have neglected to make use of them, or why all the textbook writers either distort the Fisherine form of the equation by use of ambiguous or inconsistent definitions, or use definitions which are too clumsy or cumbersome for application to statistical data. It seems incredible that the appearance in American economic literature of the index number form of the equation, and its derivation, should have been delayed for several decades after Fisher's popularization of the equation, and that only one attempt has been made to utilize the equation in a practical way by developing a set of index numbers of all four of its elements.[9]

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[9] The earliest presentation of the index number form of the equation of exchange and its derivation with which the writer is acquainted is in a paper, "Comments on the Equation of Exchange," given at the Fifth Annual Conference, Indian Economic Association, Patna, India, December 1922 (*Proceedings* of the Conference, pp. 88-105). More detailed treatments of the relation of price and quantity index numbers to the theory of the value of money and the equation of exchange are given in François Divisia, *Economique Rationelle* (Paris, Gaston Doin, 1928), Ch. XIV, and in Griffith C. Evans, *Mathematical*

A Note on the Relationships of Bank Capital to the Lending Ability of the Commercial Banks

There has been published in recent months a spate of articles, pamphlets and monographs which have discussed the problems of bank capital.[1] Most of these take note of the very low ratio of capital accounts to assets or deposit liabilities.[2] In the samples which have come to my attention this is universally regarded as an unfavorable development from the standpoint of the longer-term interests of the bankers, their customers and patrons. The authors point with alarm to the fact that inadequate bank capital creates a condition inimical to the maintenance of depositor confidence, to the ability of the banks to absorb losses and still maintain their solvency—and lastly, that inadequate bank capital curtails the ability of the banks to supply their business customers with needed credit.

It is with this last "function" of bank capital that issue is here taken. Judged by the many variants of statements concerning the relationships of bank capital to the lending ability of the banks, the belief is apparently widely held that the capital accounts constitute a *source* of loan-funds; that commercial banks loan out the savings of the banks' owners.

Such statements are common and are to be expected in the trade journals, but when they appear in the more scholarly publications, or are authored by professional economists, they should not be allowed to go unchallenged. Four such statements have been selected for examination here.[3]

Introduction to Economics (New York, McGraw-Hill, 1930), Ch. IX. Index numbers of the elements of the equation of exchange for the United States for the period 1919-1947, quarterly and annually, are given in a paper, "Index Numbers of the Elements of the Equation of Exchange," presented by the writer at a joint meeting of the Econometric Society and the American Statistical Association, December 28, 1948 (available in mimeographed form; abstract published in *Econometrica*, Apr. 1949, XVII, 176).

[1] The terms capital and capital accounts are used synonymously. As so used they include the aggregate of capital stock, surplus, undivided profits and all net worth reserves.

[2] Bank capital as a percentage of total liabilities has declined, with minor reversals of the trend, for the past seventy-five years: from a percentage of approximately 35 in 1875 to about 7 as of the present time. The series is characterized by a number of sharp declines in the capital ratios with connected plateaus of relative stability. In the 1880's, for example the level was about 30 per cent as compared with about 20 per cent during the 1900-1910 period, and about 12 per cent in the 1930's. In the course of World War II, the ratio fell decisively below the 10 per cent level, traditionally regarded as a minimum for safety. Since the end of the war the capital ratios have tended upward, largely due to an expansion of bank capital accounts. This in turn is almost entirely attributable to retention of earnings.

[3] *The Increased Dependence of Business on the Commercial Banks*, Bull. No. 175, Institute of International Finance, The Schools of Business of New York University, Mar. 4, 1952, pp. 4, 5, 12, 19. Gaylord A. Freeman, Jr., *The Problems of Adequate Bank Capital*, Illinois Bankers Association, May 23, 1952, pp. 2, 5, 10, 13, 44, 47, 79, 80. Other examples could be cited from an article by Marcus Nadler, "The Trend of Commercial Loans," *Finance*, Jan. 15, 1952, see especially pp. 41, 42, 95. Similar misconceptions of the basic nature and distinctive character of the commercial bank as contrasted with all other types of financial institutions are to be found in many of our recent money and banking textbooks. See, for example, George W. Woodworth, *The Monetary and Banking System* (New York, 1950), p. 84, and Chart 70; E. W Boehmler, R. I. Robinson, F. H. Gane and L. C.

On page 12 of the bulletin published by the Institute of International Finance is the statement:

> If the need for working capital should grow it will create problems for the commercial banks, particularly for those whose capital is small in relation to deposits and risk assets. . . . Therefore, unless the banks take measures to expand their lending ability by increasing their capital resources. . . .

And at the end of the bulletin (pp. 18, 19, italics added):

> In view of the vital function banks perform in the economy and *the definite relationship between the capital resources of a bank and its ability to lend* it is important that banks be in a position to increase their capital resources either through retained earnings or the sale of stock in the open market. In this way the banks would be enabled to meet the increased requirements of industry and trade.

Similar notions are to be found in the monograph published under the auspices of the Illinois Bankers Association. On page 5, footnote 12, of this publication the author states:

> . . . if there is a continued growth of demand for credit the limited capital of many banks will prevent their providing the additional credit.

And on page 79:

> The principal function of capital is to . . . enable the bank to continue in business, and provide needed credit.

It is recognized of course that there are some relationships between bank capital and the ability of the banks to lend. This note is merely a denial that bank capital is a *source* of such funds.

State and national laws have long placed limitations on the amount any single bank can lend to any single borrower. Most of these limitations have defined these maximums in terms of a percentage of capital or of capital and surplus. However, such a limitation does not curtail the ability of the entire system of banks to make loans, except in a purely administrative sense.

Furthermore, supervisory authorities have tried, with virtually no success, to relate the volume of bank capital to the volume of liabilities, or of risk assets. To the extent that low capital ratios cause bank examiners to put pressure upon bankers to restrict their lending, it may be said that "inadequate" capital can lead to a denial of business loan applications. But the record shows that various "rules-of-thumb," including the venerated "10 per cent" criterion, have long since gone by the board. Unless supervisory authorities are much more successful in the future than they have been in the past in restricting bank lending to a definite ratio of capital funds it could not be concluded that bank credit is definitely tied to or limited by the volume of bank capital. Indeed if current trends are indicative, it seems probable that supervisory au-

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Farwell, *Financial Institutions* (Homewood, 1951), p. 91; Jay L. O'Hara, *Money and Banking* (New York, 1948), p. 101; and Charles L. Prather, *Money and Banking,* 5th ed. (Homewood, 1953), p. 223.

thorities will put even less credence in "rules-of-thumb" and more reliance on qualitative judgments in determinations of the adequacy of bank capital.[4]

The foregoing should not be interpreted, however, as a denial that the expansion of capital accounts will not ordinarily increase the lending ability of the banking system, *but the increased lending ability derives from the fact that an expansion of the capital accounts, by causing a diminution of deposits in the system, releases excess legal reserves.*

While it is possible that capital accounts of banks could grow out of the investing of previously idle currency hoards, or from gold flights from other countries where the owners chose to invest their funds in new bank stock, these and other similar sources are extremely unimportant. For all practical purposes the only really significant "outside" source of capital for banks is the bank-held savings of bank customers. Consequently an expansion of commercial bank capital accounts tends to cause an equal reduction in the banks' deposit liabilities. The increased lending ability of the banking system therefore grows out of the release of excess reserves within the system.[5]

An expansion of the capital accounts of banks through the retention of earnings will increase the lending ability of the banks for the same reason since the retention of earnings tends to cause demand deposits to decline by the same amount that the equity accounts (undivided profits) are expanded. Thus excess reserves are released and on the basis of these the banks can, if they have the opportunity, create a structure of loan-deposits equal to the volume of earnings retained.

[4] Neither the supervisory staff of the Comptroller of the Currency nor that of the Federal Deposit Insurance Corporation adhere at present to any mechanical or fixed standard or ratio in gauging the adequacy of bank capital structures. Their practices, which are borne out by various public statements, indicate that they believe that a uniform standard would be applicable to only a few banks, and that the test of capital adequacy for any given bank should give consideration to the quality and nature of its assets, the quality of its management, and the general manner in which the business of the bank is conducted. See statement by Maple T. Harl, chairman, Federal Deposit Insurance Corporation, "What Are Proper Standards For Bank Capital?", *Banking*, Jan., 1952, xliv, 35. See also the *Annual Reports* of the Comptroller of the Currency and the Federal Deposit Insurance Corporation. For a summary of views and practices of state supervisory authorities see: *A Report of the Committee on Risk Asset Ratio Study*, New York State Bankers Association, Mar., 1952, especially pp. 17-22.

[5] These effects could easily be overestimated. If, for example, all holders of time deposits in commercial banks could be induced to buy new issues of bank stock this would not increase the lending ability of the banks by the volume of these deposits, but only a fraction thereof. Taking the 1952 year-end figure of approximately \$40.3 billion for the total volume of time deposits in all commercial banks and assuming an average reserve ratio of .05 required against these deposits we obtain a figure of \$2.0 billion as being the volume of excess reserves released if all time deposits were invested in new bank stock. On the basis of these excess reserves the banks could (*cet. par.*, including the public's holdings of currency and assuming an average reserve ratio of .15) create approximately \$13.3 billion in new loan-deposits. The formula for the above calculation is $L = C/R$, where L represents the volume of loan-deposits potentially creatable; C, the volume of excess reserves in the system; and R, the weighted arithmetic average of the reserve ratios applicable to demand deposits for all banks in the system.

It is impossible to make a similar estimate for demand deposits since the volume of these deposits held idle and regarded by their owners as savings is indeterminate.

Substantially the same reasoning applies to any given bank in the system. If the expansion of the capital accounts comes through the retention of earnings, the lending ability of the bank is increased because there has been a decline in the deposits of the given bank and/or other banks, thus causing an expansion of the bank's excess reserves. If the retention of earnings is at the expense of the customers of other banks, the bank's lending ability will be much more enhanced than were these earnings at the expense of the bank's own customers. Income derived from the customers of other banks adds to the total as well as the excess reserves of the bank, while earnings derived from the bank's own customers add nothing to the bank's total reserves. In the latter instance excess reserves are increased only a fractional part (around 15 per cent on the average) of such earnings.

If the capital accounts of a given bank are expanded through the sale of new issues of stock this will also cause a reduction in the deposits of the given bank and/or other banks, unless (which is unlikely) the stock is purchased out of currency hoards. The lending ability of the bank is again increased for the same reasons given above; viz., the release of excess reserves (where the owners of the new stock are customers of the given bank), or the expansion of total (and excess) legal reserves (where the owners of the new stock are customers of other banks).

Whereas the lending ability of a bank is increased more by the sale of bank stock to (or the derivation of earnings from) the customers of other banks, this advantage is at the expense of other banks with the result that, from the standpoint of the system, the lending ability of the banks is increased only to the extent (or less) that deposits are utilized (and thereby destroyed) in these operations. Even if it is assumed that the earnings retained, or the savings utilized in the purchase of new issues of stock, are entirely at the expense of the demand deposit, rather than the time deposit, holdings of bank customers, new loan applications can only be accommodated to the amount of these deposits.

Lest this equivalence be misinterpreted it is perhaps well to reiterate the well-established fact that commercial banks, in their lending or investing activities, create credit. And from this it has been repeatedly affirmed that the commercial banks do not, indeed cannot, lend out the savings of their depositors. From the foregoing discussion it should also be apparent that the commercial banks cannot loan out the savings of their stockholders, either voluntary or forced. But there is this difference: When a bank depositor saves and keeps his savings in the bank this simply results per se in *idle* deposits, but no change in either the volume or the composition of the assets and liabilities of the banks.[6] There is thus no change in the lending ability of the banks unless the depositor chooses to transfer these savings from the demand to the time category, or from a bank having a higher to a bank having a lower reserve ratio requirement.

[6] This action on the part of bank customers by reducing the turnover of funds dampens effective demands in the markets, and thereby tends to diminish the future opportunities of the banks to lend.

When a bank customer saves and puts these savings into new bank stock, or a bank stockholder has savings forced upon him by action of the board of directors, this causes a diminution of deposit liabilities and a corresponding increase in the banks' net worth accounts. Since reserves are only required against deposit liabilities this creates excess reserves in the system and consequently increases the lending ability of the banks. If the banks are able to take advantage of their new-found excess reserves they do so by accommodating borrowers (with immaterial exceptions) with newly created deposits. Thus it may be said that, in so far as borrowers are accommodated with deposits, the commercial banks originate all funds lent. They are not middlemen in the lending process for either depositors or stockholders.

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Wicksell on Fiscal Reform: Further Comment

With its emphasis on Wicksell's benefit-*theory* of tax reform, Professor Buchanan's recent "Comment"[1] supplements what I had to say mainly about Wicksell's *practical program* of fiscal reform in my article.[2] Buchanan's discussion is an excellent summary of Wicksell's theory of "justice in taxation" as expressed in *Finanztheoretische Untersuchungen*. This summary, however, needs amplification on an important point because Buchanan neglected to mention the preconditions Wicksell regarded as necessary, and the existence of which he postulated in developing this argument, for his schema for "just taxation." These conditions were:

1. Intensively developed, democratic political institutions involving *inter alia* universal adult suffrage and elections on the basis of proportional representation, to the end that all minorities might achieve political representation, in proportion to their strength.[3]

2. An undertaking by parliament always to consider proposed expenditures along with the taxes necessary to support them and to allow minorities ample opportunity to veto and amend majority proposals which would not pass unless they received a qualified majority vote (of at least two-thirds, or more, if possible and practicable) of the members of parliament.

3. *A revision by gradual confiscatory taxation of some existing property relations and of the distribution of income and wealth so that the revised distribution might be sanctioned as "just" by a social consensus reflecting the contemporary sense of justice.* Among the property rights, types of wealth, and income he would have modified and subjected to confiscatory taxation were: (a) the then unlimited right to acquire property by inheritance, (b) monopoly gains of all sorts, (c) most varieties of "unearned" incomes and increments in asset values—particularly in land values in communities with increasing den-

[1] James M. Buchanan "Wicksell on Fiscal Reform—A Comment," *Am. Econ. Rev.*, Sept. 1952, XLII, 599 ff.

[2] Carl G. Uhr "Knut Wicksell—A Centennial Evaluation," *Am. Econ. Rev.*, Dec. 1951, XLI, 829 ff.

[3] Knut Wicksell, *Finanztheoretische Untersuchungen* (Jena, 1896), pp. 123 ff., and also see one of his tracts *Rösträtten och Skatterna* (The Franchise and Taxation), (Stockholm, 1898).

sity of population, (d) value-gains that accrue, and abnormal concentrations of wealth that are frequently made possible for large property owners and entrepreneurs at the expense of small owners and of the propertyless, in the course of business fluctuations and as a result of sustained periods of inflation, such as occurred during the first World War and its aftermath.[4]

Given these conditions—and it is clear that with respect to condition (3) this was demanding a good deal—Wicksell was anxious to place all decisions concerning public expenditures and taxes (except taxes to cover interest and amortization on the public debt, for reasons given on page 600 and note 6 of Buchanan's "Comment") under the voluntarist principles of relative unanimity of consent by all parties in a thoroughly representative parliament. Because these preconditions were not even approximately realized during his lifetime, Wicksell found it necessary to agitate for political reforms to make them possible, and to support progressive income and property taxes. Although the latter were not a perfect answer to his quest for justice in taxation, they tended at least to remove the worst injustices perpetrated under the tax systems of his day. Those systems relied almost exclusively on indirect taxes enacted by parliamentarian majorities representing mainly the propertied classes because, until the close of World War I, the franchise was generally denied to the propertyless.

Wicksell's advocacy of the "confiscation principle" of taxation to obtain the desired revision of the distribution of wealth, was mainly intended (a) to eliminate all forms of rent from the category of private income and (b) to make restitution for and prevent the recurrence of the "capitalistic bolshevism"[5] that affects the distribution of wealth when the value of money is undergoing substantial change, especially during periods of inflation.

To the extent possible, Wicksell wanted to eliminate rent from private income by taxation, because income of this type can presumably be taken from individuals by the state without impairing their production incentives and without reducing the output of goods and services. Then the state in turn ought to use the corresponding revenues for a secondary distribution of social real income to all citizens in the form of an increasing variety and quantity of useful public or social services, especially in the fields of education and public health, for expansion of these services would provide greater equality of opportunity for all citizens, and they would also contribute both directly and indirectly to an increase in general productivity.

In order to reinforce the foregoing long-run aim by appropriate short-run action, Wicksell held that the pervasive changes in the distribution of wealth which are a byproduct of significant changes in the value of money should, so far as possible, be prevented. If they could not be prevented entirely, then

[4] Knut Wicksell, *Finanztheoretische Untersuchungen*, pp. 143-50.

[5] This descriptive phrase was coined by Wicksell's colleague, D. Davidson, in an article on "Valutaproblemets teoretiska innebörd" (Theoretical Implications of Problems Relating to the Value of Money), *Ekon. Tids.*, 1920, xxii, 83 ff. It referred to the progressive acquisition of wealth by the debtor class or enterpreneurs from creditors and rentiers that occurs in an inflationary period as a result of the decline in purchasing power of money. The more protracted the inflation, and the higher it spirals, the more thorough this form of "bolshevism."

upon the return of more stable monetary conditions, arrangements should be made for partial restitution of losses[6] to those who had been impoverished as a result of the preceding inflation (or deflation). To his mind, a money of stable value, *i.e.*, a nearly constant price level, was a prerequisite for rational economic conduct, especially with respect to individuals' plans or investments for the future. Moreover, this stability seemed essential to Wicksell for the protection and progress of democratic political institutions in society.

It is, of course, possible that Buchanan may be right in saying that because of the existence of strong, functional groups and because of the Keynesian impact on fiscal policy, Wicksell's voluntarist benefit-taxation-schema is "deserving of more careful consideration than when . . . first proposed."[7] Yet this seems rather improbable. A proposal that presupposes a "just distribution" is not much more applicable to our own than to Wicksell's world, not unless it can be shown that Wicksell was wrong about this precondition and that, in fact, his schema is applicable with net advantages regardless of the character of society's distribution of income and wealth. Thus far, this has *not* been demonstrated. Further, the contemporary fiscal problem also involves more variables than those Wicksell recognized in *Finanztheoretische Untersuchungen* (though he came closer to seeing most of them in his monetary analysis); hence its solution apparently requires a different approach and treatment from that which it received there.

CARL G. UHR*

[6] Wicksell's most explicit argument for the restitution scheme is found in the separate statement he made in a report to the Swedish government in 1920 as a participant in its Commission of Financial Experts, *"Bilaga till Utlåtande av 1920 Års Finanssakkunnige"* (Appendix to the Report of the 1920 Commission of Financial Experts), (Stockholm, 1920).

[7] J. M. Buchanan, *loc. cit.*, p. 602.

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Domestic Air Line Self-Sufficiency: Comment

Mr. Harold D. Koontz, in two recent articles[1] has advocated the merger of the present sixteen trunk line air carriers into a system of six carriers.[2] That consolidation is essentially to be in the form of combining the twelve small carriers into two systems, while leaving the four largest carriers little changed.[3] Feeder lines are not considered.[4] The purpose of this note will be to analyze the argument on which Koontz bases his policy recommendation, rather than to examine that policy and the alternatives, if any, to it.

Koontz begins with an attempt to estimate the amount of the subsidy. He

[1] "Domestic Airline Self-Sufficiency," *Am. Econ. Rev.*, Mar. 1952, XLII, 103-25; and "Economic and Managerial Factors Underlying Subsidy Needs of Domestic Trunk Line Carriers," *Jour. Air Law and Commerce*, Spring 1951, XVIII, 127-56.

[2] *Review*, p. 124.

[3] *Journal*, p. 154.

[4] There are some 20 feeder or local service lines, the largest of which are about the size of the smallest trunk lines, measured in gross revenue. The classification is arbitrary; essentially those in operation prior to 1938 are classified as trunk lines, while feeders have entered the industry since the end of the war.

assumes that a service rate (*i.e.*, nonsubsidy rate) for the carriage of air mail would be the same as for the carriage of passengers.[5] It is difficult to see the reason for assuming that a mail rate yielding the same revenue per ton mile as the passenger rate is thereby somehow a nonsubsidy rate. The passenger service is sold in a mass market, in which, although there is often but one seller of the air line service, there is a broad group of buyers who choose air service as only one of several competing means of transport. In such a market, conventional pricing concepts are applicable. Mail, however, is transported under conditions approaching those of bilateral monopoly, with a single buyer of the service, the Post Office, and often a single seller, the air line serving the pair of cities involved. Nor is there even any relation between the postage rates which Congress establishes for the Post Office to charge the users of the air mail service and the rates which the Civil Aeronautics Board establishes for the Post Office to pay for the carriage of its mail. The price elasticity of demand for the carriage of air mail may well be zero. It is hard for me to see why passenger rates, an average of coach and first-class fares in continually variable proportions, even assuming that existing passenger fares represent optimum pricing in the various passenger markets being served, should somehow represent a norm for mail rates, which would appear to be a completely different market. In a bilateral monopoly situation, such as the relation between the Post Office and the air lines, there will be no market price in the usual sense, and price will be determined by bargaining. If subsidy is defined as payments in excess of market price, the subsidies are also indeterminate. As Locklin has argued, it is only in a special case that the Ernst and Ernst method is appropriate.[6]

Koontz shows that if the air lines had been paid for the carriage of mail on the basis he suggests, all lines would have been paid less, with a resultant decrease in net operating income.[7] In 1949 only the big four carriers would have

[5] *Review*, p. 105; *Journal*, pp. 128-29. Although Koontz sets forth no justification for his assumption, that assumption is perhaps derived from the report of Ernst and Ernst on the separation of compensatory mail pay from total mail payments ("Report of Ernst and Ernst on Survey of Separation of Compensatory Mail Pay from Total Mail Payments to Domestic Airlines," *Journal*, Spring 1951, XVIII, pp. 206 ff.) They write, "Since passenger and mail are the primary services, and are rendered jointly (passengers contributing more than 85 per cent of the total revenue and mail approximately 6 per cent), we believe that the compensation paid for both services should be related, varied only to cover the cost differential existing because of the exclusive passenger or exclusive mail costs involved" (*ibid*, p. 233). This represents, however, a statement of faith on the part of the cost accounting firm, and does not necessarily constitute a principle to be accepted without economic analysis.

[6] D. Philip Locklin, "A Critique of Proposals to Separate Subsidy from Air Mail Pay," *Jour. Air Law and Commerce*, Spring 1951, XVIII, 166-180.

That case requires that total air line revenues, including mail revenues related to passenger fares, be just sufficient to cover all costs including a fair but not excessive return on investment. Under conditions in which total revenues, including mail revenues so fixed, are greater or less than total costs, including returns on capital, the establishment of mail rates based on passenger fares is not proper, and the fixing of mail rates above the level of fully allocated costs based on market consideration will only constitute a subsidy if total costs of air mail service exceed the amount which the users would be willing to pay.

[7] *Review*, pp. 106-07.

been in the black; in 1950 half the lines would have been in the black. Koontz, however, regards 1949 as more normal than 1950,[8] even though most economic time series show a dip for the earlier year. It is this evidence of poor financial performance—that is, what would have been poor financial performance if passenger fares had been paid for the carriage of mail—that leads Koontz to search out its causes (other than his own assumptions) and make his policy recommendations.

There follows a section in which Koontz demonstrates that there are not substantial differences in the average cost per available ton mile of the sixteen carriers.[9] Available ton miles represent total transport capacity, some of which will be utilized, and some left to perish through underutilization. Presumably, however, air line management is producing revenue transportation rather than potential transportation, so that a more relevant calculation might have been average cost per revenue ton mile. But because the average cost per available ton mile does not show great variations between carriers, Koontz concludes that economies of scale are absent, although he points out later that it is variations in the load factor[10] which essentially account for the less favorable earnings in the commercial market of the smaller carriers.[11] This implies that perhaps a smaller proportion of seats are occupied on the smaller lines, which still further implies that possibly the unit is too large. I submit that the matching of the size of the productive unit, in this case the plane, to the size of the market, is one of the problems generally comprehended among those of economies of scale. It is also true, and the industry has shown considerable concern thereon, that no small modern aircraft, suitable to lightly trafficked routes, are available from American manufacturers. Smaller air lines thus are largely forced to employ units larger than can be filled by their traffic. But no amount of corporate merger will solve the technical problem of providing small, fast, and cheap aircraft for thinly trafficked routes.

Koontz then turns to variations in the effectiveness of management as a possible explanation for the variations of profits between carriers. He explains the profitability of Eastern and American as resulting, in part, from the offering of a high volume of frequently scheduled service.[12] If the profits of these two carriers are due to the size of their output, this hardly seems consistent with his statement on the preceding page: "When only the nine largest carriers are considered, evidence of any economies of scale virtually disappears."[13]

Koontz indicates that although there are wide differences in managerial effectiveness, such differences are insufficient to explain the differences in profitability. While that may sometimes be true, there may be other cases in which differences in managerial ability are important. For example, a simple test of managerial ability would seem to be its response to changes in the

[8] *Review*, p. 108.

[9] *Review*, pp. 108-14; *Journal*, pp. 133-40.

[10] *I.e.*, revenue ton miles divided by available ton miles.

[11] *Review*, p. 117; *Journal*, pp. 144-45.

[12] *Review*, pp. 114-15; *Journal*, p. 150.

[13] *Review*, p. 113.

volume of traffic. If output, measured in revenue ton miles, changes, one would expect an alert management to be able to change its costs in the same direction, although, of course, not necessarily proportionately. Thus if traffic declines, management, at least within the limits imposed by the indivisibility of the productive unit, the aircraft, should succeed in making some cost reductions; and likewise, above the minimum size, one would expect management to have to increase its costs somewhat when traffic rises. On heavily travelled routes the qualification of indivisibility may become unimportant.

A leading trade paper, *American Aviation,* publishes monthly data on air line traffic and expenses, taken from reports of the carriers filed currently with the Civil Aeronautics Board. During the period of relative price stability between January 1947 and the outbreak of the Korean War, carriers' cost figures can be used without the clear-cut necessity of a deflator, so that simple correlations of total operating expenses, in unadjusted dollars, and total revenue ton miles can be made for individual carriers. As just indicated, one would expect the well-managed carrier to show a positive relation between changes in revenue traffic and changes in total cost. For the period for which I have scrutinized the data, January 1947 to May 1950, twenty-nine observations or twenty-eight intermonthly periods, tightly managed and profitable Eastern had such a positive relation 20 times, and negative only 8. United had 17 positive relations and 11 negative. TWA, least profitable of the large carriers, had a positive only 13 times, and negative 15 times. Thus it was more often than not the experience for TWA, at least during those 29 months, to spend more when traffic declined and to cut expenditures when traffic rose. I think it can be said that differences of this magnitude in managements' responses to changed conditions may well be sufficient to account for the differences in profitability, at least as between the particular carriers mentioned. That difference in profitability had been substantial.

Koontz then suggests that load factor is the most important factor in financial self-sufficiency, and that high load factors may be obtained by serving major markets.[14] This may be another way of saying the aircraft in conventional use are too large for the market they serve at the existing price level. But let us examine a moment the first proposition: that high load factors mean profitability. Koontz' Table V, showing, for 1949 and 1950 for each trunk carrier, actual load factor and net operating income adjusted by his method, that is, by charging passenger fares to the mail load, is the basis for his assertion that improved load factors are the solution. He points out that most lines could have operated profitably, even after mail pay adjustment, if they had had the load factor of American, United, or TWA, about 58 per cent in 1949 and a few points higher in 1950. But he ignores his figures which indicate that Eastern operated profitably on a 46 per cent load factor in 1949; and 53 per cent in 1950. For 1949, the lines with higher load factors than Eastern's, but nevertheless with losses after mail pay adjustment, represent nine of the twelve other trunk carriers, though in 1950 only two were clearly inconsistent with his position. Thus, while load factors must be an important factor in profit-

[14] *Review,* pp. 117-22; *Journal,* pp. 144-45.

ability, other explanations cannot be discarded. The profitability of Eastern has still another aspect which is awkward for his thesis. He ascribes Eastern's profitability to its "policy of offering a high volume of frequently scheduled service."[15] There is nothing inconsistent with frequent service and low load factors, but can Koontz mean that most lines are profitable because of high load factors, and Eastern is profitable because of low load factors?

Koontz concludes that there is a high degree of correlation between large airlines and service in large markets, defined as the top 97 pairs of stations, in rank order of traffic generation. Such a conclusion would appear tautological, the same statistical unit, volume traffic, accounting for both large carriers and large traffic centers. It is, however, not inconceivable that the profitability of the large carriers serving large markets is due, to the extent that it is related to the size of the markets served at all, to the service of few small markets rather than many large. Koontz offers no direct evidence at this point.

There is, at any rate, still further room for question of his hypothesis: "The importance of having the high traffic density pairs of cities on a carrier's routes cannot be overestimated. Heavy travel brings favorable load factors, particularly where aircraft can be scheduled nonstop between the high traffic generating pairs of cities."[16] The exceptions to this proposition, as he indicates,[17] are TWA, National, and Western, which carriers served the so-called productive markets but did not get their "prorated share" as calculated in Table VI.[18] That failure to get the "prorated share" is ascribed to equipment shortages,[19] or in other words, a shortage on the supply side. If failure to get the "prorated share" of the market were due to such supply shortages, we would expect to find such supply as was available to be fully utilized. However, his Table V[20] shows the following load factors:

REVENUE LOAD FACTOR, DOMESTIC TRUNK AIR LINES
(per cent)

	1949		1950	
	Total	Passenger	Total	Passenger
Trunk line average	53.4	59.2	57.2	62.7
Trans World	58.4	60.9	61.0	65.4
National	37.5	44.9	47.2	53.6
Western	49.5	50.6	56.7	57.2

Thus, while TWA is above the industry average, National and Western are below. It is hard to believe that it is a shortage on the supply side that causes Western and National, at least, to sell a below average share of their available

[15] *Review*, p. 114.

[16] *Review*, pp. 118-19. See also, *Journal*, p. 145.

[17] *Review*, p. 121. Northeast was also an exception.

[18] *Review*, p. 119; *Journal*, Table 8, p. 146.

[19] *Review*, p. 121; *Journal*, pp. 150-51.

[20] *Review*, p. 116; *Journal*, Table 4, p. 135, shows total load factors for 1949 only.

output, and the reader might almost suspect that Koontz has confused demand and supply.

Since there seem to be certain deficiencies in the reasoning which underlies his diagnosis of the ills of the industry, it may be unnecessary to discuss here the merits of his policy recommendations. We might point out that it is his position that those carriers which are in difficulties are in that position because of the nature of the market they face; that is, the problem is one of demand. Will those problems be alleviated by the proposal to change the structure of the industry, that is, to make changes in the supply pattern?

It is, of course, always possible that a helpful prescription may nevertheless follow from a faulty diagnosis, and the merger program which Koontz advocates should receive, and has received, considerable attention. There is a great need for both careful analysis and fresh imagination with regard to our air transport policy.

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Air Line Self-Sufficiency: Rejoinder

I welcome this opportunity to reply to Mr. Carter's interesting comments on my articles concerning the problem of financial self-sufficiency of the domestic trunk air lines.[1] It is gratifying to have these papers arouse such interest, although I wish that I might have found in my colleague's analysis more which would, in my judgment, contribute to the solution of the complex public policy questions involved in air line subsidies.

Except for Carter's point with regard to matching the size of the aircraft to the traffic available (an impracticable half-truth as will be pointed out), none of the comments he makes affects the validity of any of the conclusions reached in my article. Nor does he so claim in any of his detailed criticisms. Nevertheless, I should like to take the liberty of dealing briefly with certain of Carter's comments in the interest of clarifying aspects of my analysis which he apparently has misunderstood.

In the first place, Carter questions my use of the passenger return as a basis for measuring the extent of excessive mail pay and comes to the unchallenged conclusion that the actual extent of subsidy is indeterminate. It is exactly because this is true, as Ernst and Ernst found out after a long and expensive study,[2] that I chose not to devote my article to the futile task of exactly determining the amount of subsidy. As was clearly set forth in my paper, this assumption was made as "a working hypothesis" and "without presuming to decide what a service mail rate (*i.e.*, one free of an element of subsidy) should be."[3]

As I further made clear in using this assumption, I was employing what

[1] Although Mr. Carter makes references to another article written by me, his argument appears to be based on the paper in the *Review*.

[2] My assumption was made prior to the completion of the study of Ernst and Ernst.

[3] *Review*, p. 105.

might be regarded as a *maximum* service rate for purposes of clearing away some of the camouflage of excessive mail pay. Carter does not argue that this assumption vitiates the general validity of the net incomes resulting or the conclusions I drew. On the contrary, if there is more of a subsidy element than results from this assumption, my thesis is strengthened.

He questions my reference to 1949 as being a more normal year for the air lines than 1950. I fail to see how anyone familiar with the extraordinary traffic demands generated by the defense activities, which were expanded when the Korean conflict broke out in June 1950, can believe that 1950 would be more normal than 1949. Certainly no one in the air line business has had illusions on this point. However, using 1949 as a more normal year than 1950 for the air lines does not imply that air line traffic had reached its peak volume in that year. The point is rather that the sudden increase in demand for air travel, particularly over certain high traffic density segments, pushed load factors above that level which experience and service requirements have proved to be normal.

Carter prefers to use the revenue ton mile, rather than the available ton mile, as the statistical base against which to measure and compare operating costs of the various carriers, although he does not show that the use of this base would affect my conclusions. There is no unanimity among air line economists on this point, although most economists and statisticians in the industry feel that the available ton mile is the more accurate measure of what an air line produces, as a producing unit.[4] While any air line manager would naturally prefer a high volume of revenue ton miles (depending, of course, on the revenue per ton mile) to a high volume of available ton miles, the latter appears to be a more accurate basis upon which to compare operating costs because it is relatively independent of market factors.[5]

Suppose, for example, that air line A flies a Convair airplane at a direct operating expense of 80¢ per plane mile and air line B flies the same airplane under similar conditions at a cost of 60¢ per plane mile. Assuming a four-ton available load, the direct expense per available ton mile is 20¢ in the case of A and 15¢ in the case of B. But suppose that air line A happens to be operating in a dense traffic market and sells all its space while air line B operates in a more normal market and sells only an average of 60 per cent of its space. In this case, the cost per revenue ton mile would be 20¢ for A and 25¢ for B. From the standpoint of efficiency of operation, rather than from the point of view of fortuity of market, would Carter say that air line A is the more efficient operator?

Carter states that the problem of the smaller air lines operating over low density routes is not load factor but rather the managerial and technical one of matching size of the productive unit (the plane) to the size of the market. If it were not for the inexorable character of facts, Carter's point would be persuasive. No manufacturer of airplanes has yet been able to produce an air-

[4] For example, cost comparisons computed for industry use by the Air Transport Association employ the plane mile and the available ton mile as statistical bases of measurement. Most managements likewise use these bases for this purpose.

[5] In preferring the revenue ton mile basis, could Carter be confusing demand and supply factors?

plane which could conveniently expand and contract in size—and with a proportionate flexibility of operating expenses—to accommodate variations in passenger and cargo load between points on a flight, or times of a day, days of a week, or weeks of a year. One cannot deny that, if an airplane could be built which would carry few passengers as cheaply per passenger mile as those which carry many, much of the economic problem in air line operation would disappear. Ideally, the kind of flexibility envisioned by Carter would be gained by having single passenger airplanes which would operate as efficiently, as fast, and as safely as airplanes built for 40 or 50 passengers. Unfortunately for the air line industry, this is an impossible technical problem, largely because of certain basic facts of airplane design and air line operation.

While no manufacturer has tried to obtain the ultimate in flexibility—the efficient single passenger air line transport—in recent years practically every manufacturer has considered seriously airplanes of 15-20 passenger capacity, and several have spent millions of dollars on such development, only to find that these are economically impracticable for operation at the level of competitive rates existing in this country.[6] Because of certain minimum standards of safety, performance, and comfort, the minimum economic size of a transport airplane is sharply limited. A plane must have at least two engines, must have minimum characteristics of stability, and other minimums with respect to such equipment as radio, hydraulic and pressurization devices, and electrical systems. Thus, to build a 20-passenger airplane would cost approximately three-quarters as much as a 40-passenger airplane.[7] Moreover, there are certain operating costs beyond those related to the cost of the airplane (such as depreciation and maintenance) which tend to place a floor under economic size. Crew salaries and expenses are an important element of operating expenses and the requirements for passenger transport operation are a minimum of pilot, copilot, and cabin attendant. Thus the small airplane Carter relies upon for his matching of the unit with traffic would have practically the same crew costs per plane mile as a 40-passenger airplane.

Carter's point that a simple test of managerial ability would be its response to changes in volume of traffic has a certain degree of validity and is one well worth studying.[8] He shows, as between Eastern, United, and TWA, that Eastern had the best record on this score and TWA the worst. I have come to similar conclusions. But does his measure show the reason why Eastern was profitable and the twelve smallest carriers had far less profitable records? His observation, albeit interesting, has no particular bearing on the problem to which my paper was addressed.

[6] Some of the interesting failures in this class of airplane, all built since World War II, are the Lockheed "Saturn," the Beech 34, the Boeing 417, and the Northrop "Pioneer." Those interested in Carter's point would do well to study the economic and technical problems of these ventures. Even the successful Douglas DC-3 would never be built at today's manufacturing costs, its low plane-mile costs (which still are not low enough to give very favorable seat-mile costs) being due largely to the low capital cost involved.

[7] It is estimated that a 21-passenger DC-3, designed to present standards of safety and performance, would cost approximately $400,000 to build now compared to the selling price of a 40-44-passenger Convair liner of $540,000.

[8] As is noted below, because of competitive problems and service difficulties this however may not be as easy in practice as Carter implies.

Carter distorts some observations made as to variations in the effectiveness of management when he questions the consistency of my references to the "high volume of frequently scheduled service" of Eastern and American and my references to the generally small differences in the costs per available ton mile among the nine largest carriers. These being facts and not judgments, his comment is curious. As I stated in my paper,[9] there is some real question as to whether these cost differences should be as small as they are, except, of course, in the case of Eastern whose fairly low cost record I repeatedly mentioned.

Carter appears unclear about some of the economic characteristics of air line operation.[10] He finds the relationship of high volume of frequently scheduled service to revenue generation puzzling. He questions how the quality and volume of service offered (the "supply side") can affect the size of the market captured and how a carrier can be thwarted in obtaining its share because of equipment shortages. He feels that there can be no shortage of equipment if a carrier's load factor lags markedly behind the industry average and voices the suspicion that I may have confused demand and supply.

If the air line market were perfectly competitive, Carter's suspicion might be justified. But this is not the case, for it is obvious that air line competition is imperfect. Surely he has not forgotten that, under imperfect competition, the demand curve facing the individual firm can be shifted by the promotional action of the firm itself. It is one of the simplest facts of transportation that, where two or more carriers serve a market, the carrier offering superior volume and frequency of service has a marked advantage which is normally greater than the service difference.[11] Naturally an air line has difficulty in offering

[9] Note page 114 where I say, "It is difficult to conceive that most of the economies of size have been utilized when air lines reach the size of the small or medium small air lines listed in Tables I and II. It is certainly open to question that there should be so little difference in costs per available ton mile between air lines the size of Braniff or Western and those the size of American or United, which are seven to fourteen times as large. One gets the impression that . . . cost control is the more effective the more the need for it."

[10] I cannot comprehend his implication that I have argued that "most lines are profitable because of high load factors and Eastern is profitable because of low load factors." As pointed out throughout my study, Eastern is in some respects an exceptional case. In any event, Carter would surely not argue that, had Eastern's load factors been higher, its profits would have been less. Nor does he challenge the *essential* point made that the weaker carriers would have earned a profit, after adjustment for mail pay, had they been able to attract traffic adequate to bring about the load factors enjoyed by American.

[11] This is a familiar phenomenon in transportation and many instances could be cited to illustrate it if space permitted. While it has certain advantages other than frequency, the far greater frequency of service offered by the Pennsylvania Railroad than by the Baltimore and Ohio between New York and Washington has been a major factor in the higher *average* passenger loads of the Pennsylvania between these points. During 1949, National Airlines offered few through flights between New York and Miami, while Eastern offered many; naturally the travelling public utilized Eastern more than proportionately to the difference in schedule frequency. While there are service features other than frequency which attract passengers, frequency, as every air line sales manager knows, is one of the most important sales weapons. And many a railroad or air line passenger operator who sought to curtail expenses by reducing frequency has found to his sorrow that he suffered a greater than proportionate loss in traffic.

adequate service in a given market if it does not have the equipment to fly the necessary schedules.[12]

In the air line business, as in other similarly regulated industries, a management may not freely choose its market. Unlike businesses whose entry is relatively unrestricted by government, an air line cannot decide that, since the market facing it is thin, it will exploit a richer and more dense traffic area. It is free, of course, to apply to the Civil Aeronautics Board for admission to these markets and the Board's docket has been crowded throughout its history with applications of this kind. Even though the Board has granted a small percentage of these many applications for new routes and route modifications, its administration of a government policy of controlled competition has sharply limited the ability of the weaker carriers to enter many of the rich traffic markets of the larger and stronger carriers. If it were not for the restraining hand of government, these weaker carriers would take a page from the book of the noncertificated coach lines and attempt to enter the more profitable traffic markets.

If the weaker air lines are doomed to a subsidy existence because they cannot reach the heavy traffic-generating segments of the American economy, and thereby receive enough profitable traffic to offset losses on the thin traffic segments, the solution is obviously to open better markets to them. This can be done through abandonment of the present regulatory policy of controlling entry, or through remaking the route pattern and reallocating fewer routes on a more balanced basis, or through a wise program of combination. The last has seemed to me to be the most prudent course for public policy.

HAROLD D. KOONTZ*

[12] The concept and significance of load factor appears to have eluded Carter. The productive unit not being a perfectly divisible one, changes to meet shifts in demand between stations and between times of day and year cannot be made to the degree necessary to sell all available ton miles or seat miles, unless, of course, a "backlog" of passengers and cargo continually exist (a situation which is approached on some high density traffic segments.) Management is often sharply limited in its ability to curtail service in order to improve loads. A low load factor is often an indication of inadequate service, rather than of too much service.

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Underemployment Equilibrium Rates of Growth: Comment

In his recent article,[1] Professor Eisner has endeavored to extend the work of Professor Domar by examining the nature of underemployment growth equilibria, as opposed to Domar's full employment equilibrium.[2] Despite his rather confident assertion that "would-be objectors to the theoretical concept

[1] Robert Eisner, "Underemployment Equilibrium Rates of Growth," *Am. Econ. Rev.* (March 1952), XLII, 43-58.

[2] *Cf.* E. D. Domar, "Capital Expansion, Rate of Growth and Employment," *Econometrica* (April 1946) XIV, 137-47; *idem,* "Expansion and Employment," *Am. Econ Rev.* (March 1947), XXXVII, 34-55; and *idem,* "The Problem of Capital Accumulation," *ibid.,* (Dec. 1948), XXXVIII, 777-94.

of underemployment equilibrium rates of growth . . . may . . . find little tangible to attack,"[3] a good deal, if not most, of Eisner's analysis seems subject to dispute. The points at issue are a series of misleading and questionable assumptions, some formal, others substantive, which cast considerable doubt on the validity of his conclusions. For convenience, we make the following comments under subheadings which refer to the appropriate equations and figures in Professor Eisner's article.

1. *Equation (17) and Figure (1):*

$$\frac{dP}{P} = \alpha\sigma\frac{Y}{P} \tag{17}$$

where P stands for productive capacity, α is a constant average (and therefore marginal) propensity to save, and σ represents "the ratio of the change in productive capacity . . . to the change in capital stock,"[4] which henceforth we shall refer to as the "productivity ratio."

Our first comment, which bears upon Domar's analysis also, concerns the reference to $\alpha\sigma$ as a full employment growth rate. This would be true only in the event that the growth in the labor supply is the same as the growth in capital stock. If the former is greater than the latter, it is clear that $\alpha\sigma$ will simply be a full *capacity* rate of growth only.[5] If the latter is greater than the former, as suggested by Domar,[6] it is also inconceivable that a growth of real income equal to $\alpha\sigma$ would provide full employment. For full capacity growth is clearly a necessary, if insufficient, condition of full employment growth. Nor can this problem be defined away (as Domar has tried to do) by having σ take account of additions to idle capital. Idle capital, unplanned, cannot accumulate indefinitely without severe repercussions on the rate of investment and employment. This point arises again in connection with Eisner's θ, so we shall defer further discussion of it for the moment.

More important, from the point of view of the present discussion, the Eisner analysis of underemployment growth equilibria, as shown in equation (17) and in each of his later, more complicated, cases, treats as constants variables which are actually functionally related to (even) long-run levels of income and employment. Specifically, the savings and investment coefficients, α and σ, are originally defined with reference to full employment. Eisner then proceeds to establish underemployment growth equilibria, as exemplified by equation (17), in which it is implicitly assumed that the full employment values of α and σ will obtain in the presence of underemployment. However, it is clear

[3] Eisner, *op. cit.*, p. 48.

[4] *Ibid.*, p. 44. Symbolically, $\sigma = \Delta Y/\Delta K$, ΔY being the change in (potential) real income or output and ΔK, the change in capital stock or (algebraic) net investment. Written in this fashion, σ is seen to be the reciprocal of the *accelerator*, $\Delta K/\Delta Y$, if the latter is represented *sans* lags. We shall have occasion to make use of these relationships in the discussion ahead.

[5] This distinction between full capacity and full employment growth and some implications have been discussed in my article, "Full Capacity vs. Full Employment Growth," *Quart. Jour. Econ.* (Aug. 1952), LXVI, 444-49.

[6] Domar, "Expansion and Employment," pp. 44-45.

that α, for instance, will tend to fall below its full employment values during periods of chronic underemployment. With the emergence of steady unemployment and excess capacity, with depressions drawn out and prosperities abortive (this is the significance for cyclical behavior of long-run underemployment), profits on the average will tend to be low; certainly they will tend to be much lower as a percentage of income during such periods than they would be in conditions of full employment. Dividends as well as speculative incomes will probably undergo severe contraction. Entrepreneurial and *rentier* incomes in general may be expected to decline as a fraction of income. These tendencies all point to a redistribution of income in favor of high (marginal) spending groups.

At the same time, σ, the productivity ratio, may tend to be higher during periods of underemployment growth than it would be during full capacity growth. In the presence of widespread unemployment, additional labor can be readily obtained to "work" the incremental capital. The ease with which other resources may be mobilized during chronic underemployment implies that the potential output associated with (net) investment will tend to be larger than it would be when the economy is confronted with full employment bottlenecks.

It is evident that an analysis of the forces which determine whether the economy will progress at full employment or suffer some sort of stagnation must take cognizance of the correlations between α and σ and the level of income and employment. The failure of Eisner to do this leaves his analysis of underemployment equilibrium seriously incomplete.[7]

But let us suppose that the values of α and σ under conditions of chronic underemployment could be established. Even then the validity of equation (17) is questionable. Eisner suggests that in underemployment equilibrium "the accumulation of capital . . ., because of its relation to the rate of growth, involves the creation of a constant proportion of excess capacity. . . ."[8] This statement is implicit in (17). It suggests that the increment in capital corresponding to a given increase in income must allow not only for the latter, but also for the maintenance of the constant proportion of excess capacity. But this leads to the implausible conclusion that the absolute amount of excess capacity will be permitted to get larger as national income rises, *despite the absence of any foreseeable use of the excess capacity.*

This last phrase is italicized because a certain amount of excess capacity is often maintained as a means of meeting peak demands in industries confronted with fluctuating demands. Also, in many of the basic industries and public utilities, where economies of scale are common, a certain amount of

[7] Contrary to Eisner's view (p. 50), the criticisms made of his diagrammatic equilibrium analysis need not necessarily apply to the Keynesian " 'saving-investment' curves of the current textbooks. . . ." For these curves may be appropriately drawn to show, for example, a declining marginal propensity to save and marginal propensity to invest as actual income falls below full employment levels and *vice versa*. And, of course, Keynesian analysis, being short run in character, ignores the σ or capacity-creating effects of investment.

[8] Eisner, *op. cit.*, p. 49.

overcapacity may be maintained in anticipation of future growth in demand.[9] Such overcapacity as this is, by definition, planned.[10] As such it differs fundamentally from the kind of overcapacity considered by Eisner. The latter kind, being the product of insufficient growth, of demand deficiency, is inherently unplanned.[11] Hence there is no reason why it should be maintained. Actually, it should have the effect of reducing the rate of (acceleration-induced) investment, thereby accentuating the underemployment tendencies.[12]

Under the circumstances, it is even difficult to envisage a steady, if underemployment, growth rate. A condition of underemployment may be taken as a situation in which a great many people are dissatisfied. This certainly is the significance of such things as excessive inventories idle plant and equipment, and involuntary unemployment of labor. Dissatisfied people may be expected to take action, action which may at first speed up the movement away from full employment, but which eventually will lead to reversal of the movement. We are thus back in the field of business cycle analysis. Steady growth rates involving underemployment, as are typified by equation (17), appear wholly inconsistent with the essential conditions of underemployment.

2. *Equations (19), (19a), (21), and Figure 2.* Professor Eisner seems to have sensed something of the problems raised by the use of "excess-capacity" term, θ. He has inserted a term into his investment equation (19a) to allow for the depressive effects of excess capacity. However, the form of equations (19) and (19a), and therefore implicitly (21), is open to question, both on the ground of economic content and on that of consistency. Reproducing these equations, we have

$$S = \alpha Y - \beta P \tag{19}$$

$$I = \alpha Y - \beta P \tag{19a}$$

$$\frac{dP}{P}\left(=\frac{I\sigma}{P}\right) = \left(\alpha\frac{Y}{P} - \beta\right)\sigma \tag{21}$$

We may first concentrate on (19a), the investment equation. It is not the growth in productive capacity (P) per se which depresses investment, but

[9] *Cf.* H. B. Chenery, "Overcapacity and the Acceleration Principle," *Econometrica* (Jan. 1952), XX, 1-11.

[10] In fact, if Y/P is used to denote this kind of excess capacity, equation (17) may be utilized to show full capacity growth which gives explicit recognition to it.

[11] To the extent that unplanned excess capacity can be used to meet planned requirements, its deflationary impact might be mitigated. Postulating this development as a generalization, however, would be tantamount to reducing the entire underemployment equilibrium analysis to a tautology.

[12] If it be argued that the kind of "excess capacity" conceived by Eisner in his Θ is the planned kind discussed in the text, then we would reply that violence is being done to the usual meaning accorded the term "excess capacity." In ordinary usage, the latter refers to capacity which is not desired, for which there is no use, which results only from the absence of better foresight, and most important, which is inconsistent with equilibrium. Additions to capacity made for reasons mentioned above are not excess capacity, and they are useless in explaining chronic underemployment. As one reader has well put it, the use of Θ to represent these planned increments in capital amounts to "slipping in Θ as a verbal disguise for a reduction in σ, but it does not represent any sort of illumination of the underemployment problem."

rather the growth of capital or capacity relative to aggregate output, *i.e.*, excess capacity, which does so. Use of the term P in (19a) probably stems from writings which claim a negative partial correlation between capital stock (or productive capacity) and investment. This view, however, overlooks the reason for this relationship, namely, the lag in the growth of income behind capital (the basic problem of the Harrod-Domar analyses), as a result of which excess capacity develops.[13]

Moreover, (19a) gives the impression that it represents an (admittedly simplified) investment function. Clearly, it is not. The attempt to make equations (19) and (19a) identical stems from the earlier Domar analysis in which the long-run saving-investment function αY is utilized. This function derives its plausibility from the Kuznets secular data showing (net) capital formation to have been a constant proportion of national income over long periods.[14] But the designation of capital formation as some fraction of income, αY, certainly does not mean that αY represents the "true" saving or, particularly, investment functions.[15] Any suggestion as a general proposition that at equilibrium the equality of planned saving and investment and/or planned and realized investment implies that these variables are functions of the same determinants is patently incorrect. Nevertheless, this is what is misleadingly implied by the elaborated short-run saving and investment equations represented by (19) and (19a). These equations notwithstanding, it is a simple matter to show that the equality of the quantities just mentioned implied by steady growth is attainable with saving and investment functions having nothing to do with each other.[16]

If it be argued that the equality of saving and investment assumed at the

[13] Nowhere is this oversight more important than in those discussions in which the marginal efficiency of capital is described as falling as the volume of investment increases. Such discussions, of course, take the level of income as a parameter. Should income increase in proportion to investment, however, it is clear that the resulting shifts in the entire marginal efficiency function would keep the rate of return unchanged as the volume of investment increases. *Cf.* my article, "The Accelerator in Income Analysis," *Quart. Jour. Econ.* (Nov. 1952), LXVI, 592-96.

[14] *Cf.* S. Kuznets, *National Product since 1869* (New York, 1946), p. 118. Actually, the fraction of real income thus saved displays a secular tendency to fall, a point ignored by many writers on saving and income.

[15] As will be shown below (p. 383), αY may be used to denote a long-run saving function.

[16] A simple first order difference equation may be employed in demonstration of this fact. Assume the income model

$$Y_t = (1\text{-}\alpha)Y_t + \lambda(Y_t - Y_{t-1}) \tag{a}$$

where λ is the annual accelerator. This equation has as its solution

$$Y_t = \frac{(\ \lambda\ )^t}{\lambda\text{-}\alpha} Y_o \tag{b}$$

where Y_o is the initial income and must be given. If we assume that $\lambda = 2.5$ and $\alpha = .1$, $\lambda/\lambda\text{-}\alpha$ has a value of .04. This means that if income grows initially in equation (a) at the compound rate of 4 per cent a year, this steady growth will be maintained. At the same time, saving and investment will be equal, even though the former is a function of the income *level* and the latter of the *change* in income.

outset of the discussion makes it permissible to identify the investment function with the saving function, then it may be asserted with equal force that the two functions should take the form of the investment function. Thus equation (19a) may be rewritten in some form such as

$$I = \lambda\Delta Y - \beta\frac{P}{Y} \tag{19b}$$

The first term on the right hand side of (19b) represents acceleration-induced investment, λ denoting the accelerator. P/Y is the ratio of productive capacity to income (output); it replaces the misleading "P" term of (19a). Equation (19b) has the advantage of according completely with the Harrod-Domar models, which are based on the accelerator.[17] In the event that (19b) were adopted, Eisner's equations (16) and (21) would have to be modified thus (remembering that λ is the reciprocal of σ):

$$dP \equiv \frac{I}{\lambda} = \Delta Y - \frac{\beta}{\lambda}P/Y \tag{16a}$$

$$\frac{dP}{P} \equiv \frac{I\sigma}{P} = \frac{\Delta Y - \beta\sigma P/Y}{P}$$

$$= \frac{\Delta Y}{P} - \frac{\beta\sigma}{Y} \tag{21a}$$

While (19b) may not be the only alternative to (19a), it does seem more realistic as an investment equation.

[17] That this is so may be shown as follows:

Write $$I = \lambda\Delta Y \tag{c}$$

then $$\Delta Y = \frac{I}{\lambda} \tag{d}$$

From the formula for the multiplier, $\Delta Y = \Delta I/\alpha$, it follows that

$$\frac{\Delta I}{\alpha} = \frac{I}{\lambda} \tag{e}$$

or $$\frac{\Delta I}{I} = \frac{\alpha}{\lambda} \tag{f}$$

So long as the average and marginal propensities to save are equal, it may be shown that $\Delta I/I = \Delta Y/Y$; cf. Eisner, *op. cit.*, p. 45. $\Delta Y/Y = \alpha/\lambda$ is the Harrod version of the growth formula. But if λ is the reciprocal of σ, then we may write $\Delta Y/Y = \alpha\sigma$, the Domar version of the formula for full capacity growth. Parenthetically, it might be noted that in the event of a disparity between the average and marginal propensities to save, the growth of investment necessary to achieve the "required" or "warranted" growth of income will be a *multiple* of the latter. Thus if s is the average propensity to save and α the marginal propensity, we may write $\Delta I/I = \alpha/s\ (\Delta Y/Y)$. Since, if anything, $\alpha > s$, $\alpha/s > 1$. This proposition may be proved by making the proper adjustments in Eisner's equation (5), *loc. cit.*

The reader's attention is also drawn to the use made of the reciprocal of Eisner's "employment ratio" Y/P. In this way, the second term in (19b) will get larger and investment smaller as the ratio of productive capacity to income (*i.e., excess* capacity) increases. This is in accord with Eisner's objectives.

Turning now to equation (19), the saving equation, two brief comments upon it are pertinent. In the first place, making saving (or consumption) a function of productive capacity as such seems untenable; there is no way in which saving can be related to *potential* output, which is what P symbolizes.[18] Nor would a term such as βP provide an answer to the "difficulties encountered in attempts to derive a long-run saving function from time series data."[19] There would still remain the problem of explaining why saving rises in a constant proportion to P. Such explanations as the Duesenberry "Veblen effects" and/or the Kuznets-Smithies effects of the population growth, urbanization, and new products are still needed.

Secondly, there seems to be a redundancy in Eisner's reasoning in connection with equation (19). This equation ostensibly drops the assumption that saving is a constant proportion of income, αY. Further, the constant in the typical short-run saving function is replaced by the trend term βP. This trend term gives formal expression to "the hypothesis that there is no long-run change in the proportion of income saved."[20] If this is true, it would appear that we are back where we started. This is the same as saying that in the long run, saving rises along a linear saving function which passes through the origin, implying that the ratio of its coordinates and its slope, *i.e.*, average and marginal propensities to save, are the same. This is precisely what the saving coefficient, α, initially implied, for α, in the term αY, is a long-run constant average (and therefore marginal) propensity to save. αY is merely a short-cut representation of a more elaborate short-run saving function which contains a trend term describing the familiar secular downward drift of this function.[21] The upshot of this is that, fundamentally, equations (19) through (21), as Eisner has presented them, do not appear to constitute a net advance beyond equations (16)-(17) if α is correctly interpreted.[22]

[18] However, it might be possible to relate saving indirectly to a (negative) term such as P/Y. Thus if a value for this ratio much greater than unity were to be used to denote chronic unemployment, the depressive effects on the savings coefficient of chronic unemployment discussed earlier might be interpolated into a saving function containing the term P/Y. Eisner has done just this in his equation (22), though using the reciprocal of P/Y and hence making it a positive term.

[19] Eisner, *op. cit.* p. 53.

[20] *Loc. cit.*, footnote 9.

[21] A graphical illustration of this secular drift of the short-run saving function along a long-run function through the origin is to be found in J. S. Duesenberry, *Income, Saving and the Theory of Consumer Behavior* (Cambridge, Mass., 1949), p. 114. See also P. A. Samuelson, "Full Employment after the War," in S. E. Harris, ed., *Postwar Economic Problems* (New York 1943), p. 35. Though both actually deal with the consumption function, the appropriate adjustments are easily made.

[22] The only way of obtaining a saving function containing a constant marginal, but variable average, propensity to save is with a linear function which intercepts the S axis below the origin; such a function is indicated by Eisner's equation (18). Proceeding within Eisner's own framework, it will be seen that if (18) is also used to denote the investment equation and is subjected to the same kind of differentiation process as that indicated in Eisner's equations (16) through (17) (p. 51), the results will be identical with those of Eisner's first model (p. 51), because of the disappearance of the constants in the course of differentiation. Thus a model based on the stated objectives of Eisner's second model (equations (18)-(21)) yields no different results from those of his initial model.

Most of the comments made in connection with equations (19)-(21) apply equally to Eisner's equations (22) and (22a). Hence we shall not undertake a detailed analysis of the latter. However, his insertion of a term (Y/P) into (22) to show the effects of stagnation on the long-run saving function is a point of interest to income analysts and stagnation theorists alike.

D. HAMBERG*

In connection with this point, the reader's attention is drawn to the difference in reasoning between Mr. Wagner and myself, despite the fact that we have both concluded that the βP term in Eisner's equation (19) vitiates his assertion that he has dropped the assumption of equality between the average and marginal propensity to consume. As a matter of fact, I find myself in agreement with Eisner's reply to Wagner, *viz.*, that equation (7) specifies an equilibrium condition, while (19) specifies a saving schedule or function; hence though P be a function of Y in (7), this certainly is not true in (19). Nevertheless, on the grounds I have argued, (19) does implicitly make the average and marginal values of the saving function equal. (Note the similarity between Eisner's reply to Wagner and my objection to Eisner's making savings and investment functions of the same things as a result of the equality of savings and investment in equilibrium.)

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Underemployment Equilibrium Rates of Growth: Further Comment

Mr. Eisner, in his article in the March 1952 issue of the *Review*,[1] discusses three cases of the determination of equilibrium rates of growth. The first case assumes that the average propensity to save (APS) equals the marginal propensity to save (MPS). An equilibrium rate of growth implies an equilibrium "ratio of income to productive capacity (or 'employment ratio')" (p. 52). However, using this conception of equilibrium, Eisner is not entirely correct in stating, when he takes up his second and third cases: ". . . we drop the assumption that investment is a constant proportion of income but we retain a constant marginal propensity to save." As we shall see, APS $\doteq$ MPS in all three cases when either equilibrium[2] or any given employment ratio Y/P exists.

His equation (18) is the traditional savings function:

$$S = \alpha Y - b.$$

Since b is a constant, obviously APS $\neq$ MPS. But Eisner modifies (18) by substituting βP for b.

However, in equilibrium[3] P is *not* a constant; rather it is a function of Y,[4] as stated in equation (7) in the article:

[1] Robert Eisner, "Underemployment Equilibrium Rates of Growth," *Am. Econ. Rev.* (March 1952), XLII, 43-58.

[2] Refer to equations (7), (7a), and (8), *ibid.*, p. 46.

[3] If one considers the employment ratio as given $\widehat{\Theta} = Y/P$, the subsequent analysis follows analogously when $\widehat{\Theta}$ is substituted for Θ.

[4] Note that Eisner is perfectly correct in stating that APS is not a constant proportion of income if both Y and P are considered independent variables of the savings functions (equations 19 and 22). But in a position of equilibrium as defined in the article, Y and P are not functionally independent; in Eisner's words, ". . . if we start from a position of equilibrium such that $Y_o = \Theta P_o$, maintenance of equilibrium requires that $\Delta Y = \Theta \Delta P$" (p. 46).

$Y = \theta P \qquad [0 < \theta \leq 1$, the equality holding in full employment$]$.

Hence equations (19) and (22) should be rewritten:

$$S = Y\,(\alpha - \beta/\theta) \qquad (19^*)$$
$$S = Y\,(\alpha\theta - \beta/\theta) \qquad (22^*)$$

From these equations one can simply prove that APS = MPS:[5]

$$\text{MPS} = \frac{dS}{dY} = \alpha - \beta/\theta \qquad (19^{**})$$

$$\text{APS} = \frac{S}{Y} = \alpha - \beta/\theta \qquad (19^{***})$$

$$\text{MPS} = \alpha\theta - \beta/\theta \qquad (22^{**})$$

$$\text{APS} = \alpha\theta - \beta/\theta \qquad (22^{***})$$

Since MPS is assumed to be a constant, then α, β, and θ are constants; hence we conclude that APS is also a constant.

As a consequence of the equality of the marginal and average propensities to save, Mr. Eisner's algebraic manipulations for deriving equations (21) and (23) can be simplified. One need only substitute the above values of MPS (or the equivalent APS) for α in equation (17) of the first case. The substitution is justified since the first case assumes APS = MPS, and this note has shown that the same equality exists in the second and third cases when either equilibrium prevails or an employment ratio is specified.

HARVEY M. WAGNER*

[5] As a result of the equality, Mr. Eisner's use of α may be confusing. In his first case, α = MPS = APS. If Y and P varied independently, then α = MPS in the second and third cases also. But in an equilibrium context, α is merely a parametric constant $\neq$MPS = APS. (See footnote 4.)

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Rejoinder

I welcome this opportunity to attempt to clear up what seem to me to be certain grievous misunderstandings of the arguments set forth in my "Underemployment . . ." article. These misunderstandings relate, I fear, not merely to my own work but to our general theories of growth of income and determination of the level of income at a given time.

Reply to Wagner. Wagner's departure from my analysis stems from his statement that "in equilibrium, *P* is *not* a constant; rather it is a function of *Y*." My equation (7), that $Y = \theta P$, is merely a formal description of "equilibrium" as I have defined it. It is most assuredly *not* a statement of how *P* may be expected to vary in relation to *Y* (or vice versa). The crux of the whole problem of economic growth as discussed by Domar and Harrod, as I

hoped I had suggested in my own brief comparison of their models, is that there is no reason to be confident that this "equilibrium," either of Domar's full employment variety or of the underemployment varieties constructed by Harrod and myself, would be maintained. Harrod, indeed, goes to great pains to indicate that growth equilibria are essentially unstable, and in so doing, lays the groundwork for the Hicksian model of the trade cycle. An essential purpose of my article was to clarify the implications of a hypothetical maintenance of a constant rate of growth. I was most certainly not indicating that our economic system is characterized by any such constant rate.

Hence it is quite at variance with my analysis to assume that such a constant rate exists and then to rewrite our traditional economic functions on the basis of that assumption. Specifically, we are accustomed to stating that saving is a function of income. Occasionally we choose to add certain other variables, as I have done, and say that saving varies in some relation to changes in these other variables. However, it is certainly foreign to the notion of a saving function to relate the variation of saving to changes in income under the rigid assumption that income remains a constant proportion of productive capacity. This of course, *can* be done, and I shall point in a moment to some value that may come from such a relation. But, I believe, to refer to such a relation as a saving function, or to refer to the derivative of saving with respect to income, obtained from such a function, as the "marginal propensity to save," as has Wagner, is to do violence to our tools of analysis.

The point to which Wagner might better have called attention is as follows. If σ is constant, that is, if the increase in productive capacity accompanying units of investment remains constant, maintenance of a constant employment ratio (income divided by productive capacity) at a fixed rate of growth requires that saving (investment) remain a fixed proportion of income. However, this assuredly does not mean that the marginal propensity to save *is* constant. For, expressing saving as a unique function of income, we would have to say that the curve representing this function on the two dimensional income-saving chart moves as productive capacity changes. The slope of this (moving) income-saving curve at any moment of time is the marginal propensity to save and it *is* constant in my equations (2b), (18), and (19). In equation (22) the marginal propensity to save ceases to be constant; partial derivation reveals quickly that $\frac{\partial S}{\partial Y} = \frac{2\alpha Y}{P}$. In none of the cases other than the most simple one, in which, by assumption, $S = \alpha Y$, does the marginal propensity to save equal the ratio of saving to income (Wagner's "average propensity to save"). Far from confirming even the constancy of the proportion of income saved, my departure from the simplified function (2b), $S = \alpha Y$, should suggest that this constancy is dependent upon the satisfaction of the conditions of growth which I have defined as "equilibrium." To allow the saving function, or the marginal propensity to save, to be defined by the condition of equilibrium which I have assumed, would be no more appropriate than to define the saving function in the Keynesian model, to which I have

tried to make my system analogous, as the (moving) intersection of (moving) saving and investment curves.[1]

Reply to Hamberg. The essential part of my answer to Hamberg must be to call attention again to my article and to the articles of Domar from which my own analysis is an offshoot. For, though objecting to my "misleading and questionable assumptions" (as well as those of Domar), Hamberg shows evidence of failing to understand the nature of those assumptions. By misinterpreting definitions and symbols he devotes much of his comment, curiously, to charging me with ignoring just those aspects of the problem to which much of my article was explicitly directed:

1. In his "first comment" Hamberg claims that $\alpha\sigma$ is "a full employment growth rate . . . only in the event that the growth in the labor supply is the same as the growth in capital stock." He reveals here an unfortunate confusion as to the meaning of σ. For as Domar has defined it, and as I reminded readers in my article, σ is the ratio of the change in productive capacity in a period of time to the change in capital stock which takes place in that period of time; it is the change in capacity which *accompanies,* not the change in capacity which *is caused by* a change in capital. Symbolically, σ is $\frac{\Delta P}{\Delta K}$, not $\frac{\delta P}{\delta K}$. What Hamberg apparently has in mind is $\frac{\delta P}{\delta K}$, the familiar marginal productivity of capital.[2] As I pointed out in my article, "The wording of this definition [of σ], it should be noted, is such that σ may well be a function of other variables than investment. In particular, increases in population which involved increases in the supply of labor would raise the value of σ."[3]

Thus, if productivity per worker were growing at a 2 per cent rate as a result of capital investment, change in technique, and all other factors, and if the labor supply were growing at a 1 per cent rate, the aggregate growth in capacity (or the full employment rate of growth) would be 3 per cent (more exactly, of course, 3.02 per cent). And this, in Domar's terms, would be precisely $\alpha\sigma$. This might have been viewed as a combination of the factors, $\alpha = .2$ and $\sigma = .15$. Now, if the rate of growth of the labor supply were to increase to, say, 3 per cent, this would in no way destroy the correspondence between $\alpha\sigma$ and the capacity rate of growth of income. Rather, the value of σ would be increased. For the increase in capacity accompanying each unit of investment would now reflect, in addition to the direct results of the

[1] On a minor point which I hope the foregoing makes irrelevant, I fail to see why Wagner claims that his note enables us to derive my equations (21) and (23) more directly. These equations were each "derived" in one step, by simple substitution. Wagner's development would seem, in addition to being spurious, to have actually certain undesirable qualities of roundaboutness.

[2] Curiously, this is exactly the confusion warned against by Domar. See, for example, his "Expansion and Employment," *Am. Econ. Rev.,* March, 1947, XXXVII, 40, where he cautions: "σ should not be confused with other related concepts such as the traditional marginal productivity of capital."

[3] P. 44, fn. 2.

investment itself (the marginal productivity of capital) and the other factors increasing productivity per worker, the 3 per cent increase in the labor supply. The capacity rate of growth of income would thus be 5 per cent (more exactly, 5.06 per cent), and assuming that the value of α remained .2, the value of σ would have been raised from .15 to .25.

It should be understood that the basic point of the Domar model is simply that growth in *capacity,* but not necessarily growth in *output,* accompanies investment. Growth in capacity will be more if other factors, such as an increasing labor supply, operate conjointly with investment to increase capacity. In order for full employment to be maintained, actual output must grow as fast as capacity, a "capacity" which presumes full utilization of all resources including labor. My own departure consists of exploring the consequences for the level of employment of rates of growth other than the rate necessary to maintain full utilization of capacity.

The possibility of underemployment of labor when capital is fully utilized is very likely a real one, but it is a problem of an essentially different nature from those tackled with the Domar model. The Domar problem is to raise demand at a rate equal to the increase in capacity. Hamberg says, in effect, that even if demand does increase at this rate something (structural maladjustments in the economy?) will prevent complete utilization of the labor supply. Presumably, increases in aggregate demand would result in price inflation of investment goods, and for some reason no change in the relative prices of investment goods and of labor would take place to bring about absorption of the increased labor supply. It is possible to explain this within the framework of a model of a stationary economy. It certainly might be true that in an economy with a continuously increasing labor supply, frictions and lags might prevent complete absorption of any given increment of labor before the next increment were thrown into the market. This, however, is all quite outside the basic model used by Domar and by me. Hamberg is not correct in finding any inconsistency on that account in our tools of analysis.[4]

2. Let us consider next Hamberg's criticisms of me for assuming "implicitly . . . that the full employment values of α and σ will obtain in the presence of underemployment." First, I do not see how Hamberg can assert that "it is clear that α, for instance, will tend to fall below its full employment values during periods of chronic underemployment." I wonder if he has not confused α, the marginal propensity to save out of income, with the proportion

[4] I cannot see why Hamberg relates underemployment to an excess of the rate of growth of the labor supply in relation to the rate of growth of capital. There seems no reason to assume that this kind of structural unemployment might not occur if the labor supply were growing less rapidly than capital, or even if the labor supply were not growing at all. (For example, locational, technological, or productwise changes might bring on underemployment which could not be ascribed to a deficiency of aggregate demand.)

It should be stated, in fairness to Domar, that he does consider the possibility that it will be physically impossible to attain the full capacity rate of growth (defined to involve full employment) in "The Problem of Capital Accumulation" (especially pp. 782-84), which Hamberg cites but to which he does not specifically refer. Domar's concept here may well be related to the ceiling to the rate of growth which plays such an important part in the Hicksian trade cycle.

of income saved. His reference to redistribution in periods of low income suggests that a lower proportion of income will be saved as unemployment increases—exactly what my functions (19) and (22) were used to demonstrate.[5] If, in fact, Hamberg has in mind the proportion of income saved, I must reply that I certainly have not assumed, implicitly or otherwise, that the full employment value of this proportion would "obtain in the presence of underemployment." The main burden of the latter part of my paper was to show how the proportion of income saved may vary with the proportion of underemployment and what some of the effects of this variation might be.

I have no objection in principle to Hamberg's hypothesis that σ may not be a constant.[6] My own presentation was intended to offer simple first approximations to the relationships under consideration. It would certainly be in order to examine the implications for the system of improving on these approximations on the basis of further theoretical or empirical considerations. It may be well, however, to evaluate carefully Hamberg's particular observation that σ may tend to be higher in periods of underemployment than during full capacity growth, in the light of Domar's discussion of the difference between σ and s.[7] Hamberg's observation may perhaps be more appropriately restricted to s, the increase in capacity relating to units of investment taken by themselves, abstracting from the possible loss in capacity resulting from displacement of existing capital stock which the new units of capital make uneconomical to operate.

3. In objecting to a concept of growth which "involves the creation of a constant proportion of excess capacity," Hamberg would appear to be misconstruing a tool of analysis as a statement about reality. I nowhere indicate that I believe that any economy can be expected to grow with a constant proportion of excess capacity. Indeed, my basic approach, in common with that of Harrod, Hicks and Domar, is that the equilibria presented would in fact be most difficult if not impossible to maintain. As emphasized in my article, Harrod's "warranted rate of growth," for example, to which my

[5] Indeed, I used considerable space in the original article, much more than it might be appropriate to employ for reiteration, to describe "low levels of investment during periods of unemployment" (p. 54 and p. 54 n), "dis-saving necessary to care for the unemployed" (p. 55), and "investment as a function of income, productive capacity and the employment ratio" (Figure 3, p. 56).

Hamberg's reference "to a redistribution of income in favor of high (marginal) spending groups" in a period of underemployment strikes me as uncertainly grounded empirically, but even more doubtful in terms of theoretical relevance to his assertion that the *marginal* propensity to save declines during periods of unemployment. It would seem quite probable that "high spending groups" maintain their high spending in the face of such adversity by borrowing and using past savings. This would hardly involve a low *marginal* propensity to save. But more important, individual or family propensities to save out of disposable income cannot be directly aggregated to obtain functions for the economy as a whole. The increased proportion of income absorbed in unemployment compensation and relief and the redistribution of income itself would both bring a sharp drop in saving as income and employment drop—hence a high aggregate *marginal* propensity to save.

[6] *Cf.* p. 44, fn. 3.

[7] *American Economic Review* (March, 1947), XXXVII, 39-40 and *Econometrica* (April, 1946), XIV, 143-45.

"equilibrium rate" is kin, is explicitly in *un*stable equilibrium; the slightest departure in either direction would set in motion forces accelerating the movement from equilibrium.[8]

Hamberg observes that "a condition of underemployment may be taken as a situation in which a great many people are dissatisfied," the result of which may be to "speed up the movement away from full employment." While not directly relevant to my model, this observation does deserve some comment in so far as it is, in effect, an unwarranted rejection of Harrod's "warranted rate of growth." I can see no valid reason for objection to the notion that a certain amount of aggregate underemployment is consistent with a situation in which some entrepreneurs are disappointed, others are satisfied, and still others achieve results which exceed their expectations. If such a situation can exist, there seems no a priori reason to reject Harrod's hypothesis that there is *some* rate of growth which (at a given time[9]) would induce entrepreneurs to behave in such a way that this rate of growth would be continued.[10] Hamberg might reject this hypothesis by asserting that there are relevant discontinuities in the function relating the aggregate *ex post* rate of growth and resultant behavior, or by asserting that the only rate of growth which would result in such behavior must involve full (or more than full?) employment. In either case, such rejection, without substantial supporting evidence and consideration of the conclusions of analysis by recent writers in the area of growth as well as the more traditional Keynesian underemployment presentation, would appear rather dogmatic.

4. Much of Hamberg's criticism of what he refers to as my "investment equation" is based on a terminological confusion. Like Keynes in the *General Theory* and Harrod and Domar, and like the United States Department of Commerce, I define *ex post* investment as identically equal to *ex post* saving; this equality is not dependent upon any equilibrium condition. My saving functions relate the amount of saving that would be *realized* at different levels of income and/or the other relevant parameters. The marginal propensity to save is hence not what society would like to save out of an increase in income but what it would actually save (in a schedule sense) if that increase were to take place (while other variables remained unchanged). If we then divide investment into "desired" and "undesired" components, it follows that saving is identically equal to the sum of "*desired* investment" and "*undesired* investment." The "*undesired* investment" may be most easily

[8] Pp. 48-50. My suggestion of "little tangible to attack" referred specifically to my endowment of "equilibrium" with no more than an unstable and largely definitional character. Hamberg's interpretation of this to mean that I "confidently" considered my article or any part of it beyond scientific criticism does credit neither to his nor to my epistemological awareness.

[9] The qualification "at a given time" is, I believe, mine rather than Harrod's. It suggests perhaps a more appropriate criticism of the concept of an equilibrium rate of growth: granting that such a rate exists, may it vary capriciously from moment to moment with exogenous variables such as expectations, politics or the state of the weather?

[10] See R. F. Harrod, *Towards a Dynamic Economics* (London, 1948), p. 82.

understood if considered to be excess inventory accumulation.[11] It is "*desired* investment" which Hamberg must be talking about when he discusses investment functions and refers to "the equality of saving and investment in equilibrium."

It should hardly be necessary to assert, in the year XVII since the *General Theory*, that planned or desired investment and actual saving are not "functions of the same determinants." I might add that this assertion need not rule out the possibility that the level of desired investment does have *some* effect on the proportion of income saved. Thus there is no need to retract the thought implicit in footnote 10, p. 54, that the amount which businessmen want to invest may actually influence the proportion saved out of a given income. For example, this influence is highly significant in the case of corporate saving and investing, where the saving and investment may be in effect identically equal for the individual saver-investor. We might even (!) ascribe *some* role to the interest rate in making the proportion of income saved a function of desired investment (and hence, indirectly, a function of the existing stock of capital and productive capacity).

Definitions do not, of course, alter substance and we could reach the same conclusions as I have (perhaps with more difficulty[12]) by using Hamberg's definitions. Thus, we might state that by investment we mean Hamberg's desired investment, the magnitude of which is determined by the acceleration relation. We could argue further that the equality of saving and desired investment is the condition for continuance of any given rate of growth. (We would here be ignoring the problem of encouraging growth by making saving always less than desired investment.) Then, in order to maintain any particular rate of growth, the level of income and the proportion of underemployment must be such that the amount saved would equal the amount of desired investment. We could thus assert, as does my article, that the proportion of underemployment related to any given sustained rate of growth depends upon the functions determining the amount of saving and the productivity of saving. Or we might state, as does my article, that once the saving and productivity parameters are given, the underemployment ratio is determined by the rate of growth. The system may be summarized briefly as $f(\alpha, \beta, \sigma, Y, dY, P) = 0$; expression in this implicit fashion has the virtue of implying nothing about the causal relations of the parameters. The function can then be made explicit to bring to the fore whatever parameter we should like to make dependent or otherwise the focus of attention.

5. Hamberg's comments on what he interprets to be my *ex ante* saving function are, I believe, partly answered in section 4, above: the saving function or schedule in my model would be the same, *ex ante* and *ex post* (any

[11] These relationships are presented more fully in my "The Invariant Multiplier," *Rev. Econ. Stud.*, 1949-50, XVII (3), 198-202. See also Lloyd A. Metzler, "Three Lags in the Circular Flow of Income," in *Income, Employment and Public Policy* (New York, 1948), esp. pp. 18-20.

[12] As it stands, Hamberg's equation (21a) is not useful for describing the relationships between rates of growth and underemployment with which my article is concerned.

difference between *ex ante* saving and *ex post* saving or investment would flow from a difference between *ex ante* and *ex post* income rather than a difference in the schedules). However, I remain puzzled by criticism that I should make saving (investment) a function of the productive capacity-income ratio rather than productive capacity alone, only to note Hamberg's admission (fn. 18) that I have done just that.[13]

Hamberg's objection to my equation

$$S = \alpha Y - \beta P \tag{19}$$

may perhaps be dismissed by reminding the reader that he has been willing to accept an equation using the term "P/Y" (19b).
For (19) can easily be rewritten:

$$S = Y\left(\alpha - \beta \frac{P}{Y}\right) \tag{19'}$$

Then saving may be viewed as a function of income and of the ratio of productive capacity and income. Dividing through by Y, we have

$$\frac{S}{Y} = \alpha - \beta \frac{P}{Y} \tag{19''}$$

indicating that the proportion of income saved is a function of the ratio of productive capacity to income (nothing more than the reciprocal of my employment ratio).

While I see nothing "wrong" with equation (19), I have no objection to passing over it to equation (22) which makes more explicit the relation between saving and the employment ratio. My main purpose in introducing (19) was expositional, to offer a more gradual transition from the simple function where, as in the Domar model, saving is a constant proportion of income.

Hamberg's charge that equations (19) to (21) in effect retain the assumption that saving is a constant proportion of income reflects a serious methodological issue, perhaps compounded with an inadvertent repetition of Wagner's error. It would appear to me useful to distinguish between that portion of saving which is a function of income and those portions which can be significantly related to other variables. The hypothesis that saving (or consumption) is related only to income is clearly one of limited usefulness (as some of our recent ill-fated predictors of national income will certainly testify). However, Hamberg's statement that my equations (19) to (21), and by later inference (22) as well, leave the marginal and average propensities to save equal is true only under some *ceteris paribus* assumption which, in effect, relegates other variables (in this case, productive capacity or the employment ratio) to oblivion. Indeed, this may be accomplished most simply by subjecting the

[13] Hamberg seems to feel that he has made some significant change in my Y/P term by inverting it and changing the sign. Actually, in an abstract model of this kind, where the main content given to relationships goes no further than the signs of partial derivatives, a change such as this is of no substance; its chief effect that I can see is to take attention away from the underemployment (employment) ratio to which I tried to call attention by using the relationship in the form Y/P.

saving function to the constraint of the "equilibrium" rate of growth condition as did Wagner. Hamberg declares himself in agreement with my objection to Wagner on this point. Yet, without Wagner's (improper) assumption of equilibrium my saving functions will meet the test Hamberg prescribes in the beginning of his footnote 22. Thus if

$$S = \alpha Y - \beta P, \tag{19}$$

on the common two-dimensional graph which Hamberg has in mind for relating saving and income, we have indeed "a linear function which intercepts the S axis below the origin"; the S-intercept is, of course, $-\beta P$ (that is, when income is zero, saving equals $-\beta P$). With Wagner's assumption that $P = \frac{Y}{\theta}$—an assumption that Hamberg rejects—this S-intercept assumes the value of zero (of course, if $P = \frac{Y}{\theta}$, when $Y = 0$, $P = 0$). It is difficult to see how Hamberg can both agree with my objection to Wagner's criticism and claim that I have retained saving functions which kept constant the proportion of income saved.

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N. Jasny's "The Soviet Economy during the Plan Era": A Correction

I regret the occurrence of a serious error in my review of this work.[1] Jasny's measurement of Soviet social accounts in terms of United States dollar prices of 1926-27, about which I had expressed certain misgivings, is not as heavily relied upon by the author as I had mistakenly assumed. It is, in fact, confined to his evaluation of the total *outputs* of various economic sectors, such as industry (broken down into consumers' and producers' goods), agriculture, and construction, and to an appraisal of investment outlay and its chief components. In each case a parallel valuation in terms of *Soviet* prices of 1926-27 is given, and the final structure of national income, as it emerges from Jasny's calculations, is entirely based on these prices.

Serious as this error may be, it does not, I think, materially affect the validity or relevance of my observations concerning the danger of using "esoteric" price structures in Soviet national income analysis. While Soviet prices of 1926-27[2] are not of course esoteric to the postwar Soviet economy in a *spatial* sense, they still suffer from a remoteness in time which is greatly aggravated by the intervening process of industrialization. In fact, the unprecedented violence of this process may well have rendered them quite as inapplicable as the prices of distant, but industrialized, America. Jasny is of course fully aware

[1] *Am. Econ. Rev.*, Mar. 1953, XLIII, 185-89.

[2] I refer here to the *actual* prices of that year as estimated by Jasny, and not to their conventional substitutes as used in Soviet statistics.

of these difficulties and his choice of the 1926-27 Soviet price pattern in preference to those of other years or other countries was not made without a good deal of critical examination, but the doubts which I ventured to express in my review concerned the general principle of such price imputations in the Soviet context compared with other methods of eliminating bias, where these can be used. Once the principle is conceded, Jasny must be deemed to have used the material available to him to the fullest advantage, subject to the qualifications concerning the estimation of composite price trends which I advanced in my review.

F. Seton

BOOK REVIEWS

Economic Theory; General Economics

Wesley Clair Mitchell, the Economic Scientist. Edited by Arthur F. Burns. (New York: National Bureau of Economic Research. 1952. Pp. viii, 387. $4.00.)

One of the things that serves in a small way to offset the loss of an outstanding personality in any scientific field is the realization that his passing will probably be followed by the publication of a memorial volume. One can then look forward to the intellectual delight of contemplating the whole of an illustrious scientific career. This has now come to pass with respect to Wesley Clair Mitchell, for whom Professor Authur F. Burns has prepared this memorial volume. Part I of this book, entitled "Life and Work," includes a lengthy introductory sketch by the editor, a delightful personal sketch by the late Professor Mitchell's wife, and a number of professional sketches and memorial addresses. This material reveals to the outside world the unique qualities of Mitchell's personality, the feeling of lofty purpose which dominated his life's work, and the inspiration which he gave to all his associates.

The appraisals of Parts II and III are attractively introduced not by the original titles of the articles, book reviews, and chapters selected for inclusion in this volume, but by new titles chosen by the editor. The early appraisals deal with Mitchell's "Place in Contemporary Economic Thought" (P. T. Homan), his "Contributions to the Theory of Business Cycles" (J. M. Clark), and his "Views on the Scope and Method of Economics" (A. B. Wolfe). The recent appraisals cover Mitchell as an "Economic Theorist" (Milton Friedman), an "Economic Naturalist" (E. B. Wilson), an "Historian of Economic Thought" (T. W. Hutchison), a "Social Scientist and Social Counselor" (A. H. Hansen), and as a "General Economist" (J. A. Schumpeter). The limitations of space do not permit an extended discussion of these various appraisals of Mitchell's work. It may be pointed out, however, that, as far as the major appraisals are concerned, the pros and cons are equally divided. The short commentaries of E. B. Wilson and T. W. Hutchison, which are in the form of book reviews, while interesting do not raise any major issues. Favorably disposed toward Mitchell are Clark, Wolfe, and Friedman, while somewhat inclined in the opposite direction are Homan, Hansen, and Schumpeter. Following Burns' suggestion, Friedman develops the interesting thesis that Mitchell's cycle analysis can be readily restated in the modern vocabulary of propensities, multipliers, acceleration coefficients and the like. Unfortunately for his own side of the case Clark plays somewhat into the hands of the opposition by stating in his appraisal that Mitchell emphasizes the "how" rather than the "why" in his cycle analysis. Wolfe's excellent appraisal is the only one that draws attention to the integrative philosophy which lifts Mitchell's work far above the level of the ordinary.

Leading the opposition, Homan's facilely written appraisal says in effect that, if institutionalism were worth cultivating (which is not the case, Homan believes), Mitchell, being without originality and philosophical grasp (p. 190), was not the one for the job in hand. The highlight of Hansen's two-pronged appraisal is the assertion that Mitchell's deficiencies as a social scientist are carried over into his views as a social counselor. Hansen's position is that, since Mitchell largely ignored the investment-saving problem, as a social counselor he failed to appreciate the value of "monetary and fiscal policies, as possible stabilizing and expansionist factors operating upon a mixed society . . ." (p. 316). There will be those who do not accept Hansen's interesting argument, asserting that Mitchell's totalistic approach quite logically fostered similarly broad views in the field of economic reform. In his appraisal Schumpeter brings up the rear guard of the opposition with the observation that Mitchell was really an equilibrium economist in spite of himself, who unfortunately was dazzled by the glitter of what Schumpter calls the "dubious Veblenite gems." It is apparent that there is a wide intellectual gulf between Schumpeter and Mitchell reflecting the basic differences between their respective mentors, Eugen von Böhm-Bawerk and Thorstein Veblen.

The various aspects of Mitchell's work are respectively seen by the reader through only the eyes of the single economist whose appraisal has been selected for inclusion in this volume. For example, there are not two or three different economists' appraisals of Mitchell's "place in contemporary economic thought." This reviewer would be much happier if readers had been given an opportunity to consider Mitchell's place in the stream of economic thought from a variety of points of view. And the same criticism applies to all the other appraisals which deal with the various facets of Mitchell's work from the point of view of only one critic.

In his prefatory note Burns explains that he did not permit his scientific sympathies to influence his selection of appraisals. He made every effort to make room for the views held by representatives of different schools of thought. There are commentaries from institutionalists, Keynesians, marginalists, and others not so easily classified. But each topic is not appraised from the points of view of these different schools. A really effective treatment would have called for appraisals from different points of view of each of the aspects of Mitchell's work listed by the editor. The reader would then perhaps be in a better position to make up his mind about Mitchell's work and to arrive at that "just and balanced appreciation" of Mitchell which the editor says in his prefatory note he hopes the reader will achieve.

The over-all effect of these appraisals must be somewhat disconcerting to many readers. They learn from Burns that Mitchell was quite aware of the value of equilibrium price theory (p. 47), but from Schumpeter that Mitchell would throw this theory "overboard" (p. 328). They are told by Friedman that Mitchell had all the elements of modern cycle theory in his own analysis of the cycle (p. 271), but by Hansen that Mitchell was concerned with measurement and description but not explanation of the cycle, and also at times showed "no recognition or grappling with the problems of investment

and saving (p. 315)." The reader is also informed by Schumpeter that Mitchell "never advocated 'policies' " (p. 326), but by Hansen that Mitchell's policy recommendations were too "radical" and "drastic" (p. 317). Homan tells the reader that Mitchell did not have an original mind (p. 186), while Clark asserts that Mitchell's work was of the "formative type" (p. 193), which presented a significant challenge to orthodox theory. Anyone thoroughly acquainted with Mitchell's attainments will wend his way through this curious maze of contradictions without any trouble. But what of the great majority of readers into whose hands this volume will fall sooner or later? Are they to conclude that Mitchell was a chameleonlike character about whose color one could never be quite certain?

The eight appraisals in this volume make little mention of the deep unity which runs through all of Mitchell's scientific interests. He had a highly integrated personality which was solidly rooted in a clear-cut philosophical position. His pragmatic philosophy, drawn from a number of different sources and distilled in his essentially independent mind, shows up everywhere—in his scientific method, in his theory of human nature, in his views on the scope of economic science, in his grasp of the interrelations of the social sciences, and in his attitude towards economic reform. It seems to this reviewer that a balanced appreciation of Mitchell can be secured only if the reader has brought to his attention the ways in which Mitchell's philosophical position binds together all that he did. Acceptance or rejection of his philosophical position is not the issue here. It is, instead, how can one secure a satisfactory understanding or appreciation of Mitchell? The answer obviously is: only by uncovering the basic unity which nourished all of Mitchell's scientific interests, and by tracing this unity throughout his scientific attainments.

The unity in Mitchell's work is not difficult to uncover. It runs through his business cycle analysis, his theory of capitalism, and his analysis of the problems of economic welfare. What Mitchell set out to do in the field of economics is quite clear. He wanted to enlarge the area of economic analysis until it became a "comprehensive study of economic behavior." The older studies, by which Mitchell meant equilibrium economics centering in price theory, should be added to until a broader economics emerges. The first step in this widening process was the development of business cycle theory; the next step was the working out of a theory of capitalism. The third step was to show the public-policy implications that flowed from his theory of capitalism. This trinity of Mitchell's interests may be separated for purposes of critical analysis, but for that "just and balanced appreciation" of Mitchell to which Burns refers, it is necessary to consider the three portions of Mitchell's work as parts of a larger whole. It is true that this trinity of interests did not receive anything like a well-rounded treatment by Mitchell. In this volume Friedman picks out a full-fledged theory of the cycle from what he describes as Mitchell's business-cycle "grab bag." It remains for someone to piece together in a similar manner the mosaic of Mitchell's theory of capitalism. His totalistic theory of the economic order is only fleetingly referred to in this volume (pp. 37 and 71). How much richer and more valuable to the general reader this volume would

have been had it included an essay on Mitchell's theory of capitalism, partially developed though it was. And the same can be said of Mitchell's theory of economic reform.

How did Mitchell view his own work? The answer to this question is given in the correspondence published in this volume for the first time, in which Mitchell states that "what I think is worth while is to accomplish some of the necessary pioneer work toward the construction of useful economic theory" (p. 66). This pioneering attitude toward the tasks to be accomplished was both an asset and a liability. As an asset it led Mitchell to look beyond the confining boundaries of orthodox economic thought, and to follow paths which promised more light on the economic problems of the first half of the twentieth century. But, as a liability, this pioneering attitude led Mitchell to pay little attention to the finished constructions of the general treatise and the polished refinements of the technical theorist. Although there may be some support for the view that Mitchell remained too long a "pioneer," still there can be no doubt but that he has won for himself an important and enduring place in his science's hall of fame.

ALLAN G. GRUCHY

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Einführung in die Wirtschaftstheorie. III. Teil, *Geld, Kredit, Volkseinkommen und Beschäftigung.* By ERICH SCHNEIDER. (Tübingen: J. C. B. Mohr [Paul Siebeck]. 1952. Pp. vi, 220. DM 17.00; paper, DM 14.00.)

With the publication of the third volume of his *Einführung*, Professor Schneider has completed his endeavor to present to his readers "all tools of theoretical reasoning that are needed for an analysis of the economic realities around us" (p. iii). His work, in this reviewer's opinion, constitutes one of the most comprehensive, most up-to-date, and pedagogically most serviceable of modern texts in economic theory.

The first volume, entitled "Theory of the Circular Flow in the Economy," appeared in 1947 and was reviewed in the September, 1949 issue of this *Review.* The second volume, on "Economic Plans and Economic Equilibrium in the Market Economy," appeared in 1949 and was reviewed in the September, 1950 issue. The third volume is about "Money, Credit, National Income and Employment." It deals with "macro-economics" (p. 2) in contrast to the second volume, which dealt with "micro-economics"; and it presents *ex ante* analysis in contrast with the first volume, which was largely confined to *ex post* analysis. (Looking backward, this reviewer has some doubts about the necessity or expedience of devoting so much space to *ex post* analysis, and he wonders whether the author would not have arranged matters somewhat differently if he had known *ex ante* all that he now knows *ex post.*)

The present volume is divided into three chapters. The first is on "The Means of Payments in our Present-Day Economy"; it is only seven pages long. The second chapter is on "The Creation and Cancellation of Money" (80 pages); the third is on "The Determinants of National Income and Its Fluctuations" (123 pages).

Schneider is ultramodern in every part of his text. He is ruthless in his treatment, or rather nontreatment, of old-fashioned theories or obsolete institutions. That the chapter on Money and Banking does not include the traditional discussion of the silver standard and of bimetallism is probably all to the good; but there is not a word about the gold standard either. This neglect, I am willing to concede, of a currency system that no longer exists is admittedly preferable to the customary overemphasis on, and long-winded exposition of irrelevant details of, the gold standard. (Excessive attention to institutional detail has prevented many textbook writers from noticing that even the United States and Switzerland have long abandoned the gold standard.) But in a textbook a discussion of the "creation of money" that does not have anything to say about gold can hardly be considered complete. The word "gold" does not appear in the index; it does appear twice in the text—together with foreign exchange and securities—when the essentials of open-market policy are explained (pp. 54 and 73); but there is no discussion of purchases or sales of gold by the banks or monetary authorities, of possible effects of changes in the official price of gold, of restrictions in the gold market, of the consequences of gold hoarding.

One cannot say that this contempt of past, recent, and current history is due to any aversion to institutional "facts" on the part of the author. That he has no such aversion he shows, for example, by the two pages on the present German banking law which he includes in the exposition of the principles of multiple expansion of bank credit. When he omits something from his discussion, he obviously does so because he thinks it is not important. He makes this explicit in his reference to the quantity theory of money (which he does not regard as worthy of discussion in the analysis of money and banking, but reluctantly includes as a brief digression in the exposition of national income formation). "Velocity of circulation" is referred to with obvious scorn; transactions velocity of circulation of money is not mentioned anywhere in the text; income velocity is accorded one page, chiefly to prove its irrelevance on the ground that it is "no institutionally determined constant" (p. 168). I do not know why this should make it irrelevant; but, as a matter of fact, its upper limit is probably institutionally determined and, indeed, this ceiling velocity plays a significant, though only implicit, part in Schneider's very fine and elegant analysis of liquidity preference and the investment multiplier.

The various techniques of banking policy—reserve requirements, open-market policy, discount policy, official declarations—are satisfactorily treated; but there is no discussion of objectives or guides of monetary policy. The best part of the chapter on Money and Banking is the exposition of the coefficient of multiple expansion of bank credit as a function not only of reserve requirements but also of differential habits of payments. This is a model of clarity.

Liquidity preference is Schneider's favorite theory. After having given it several pages in Volume II, he treats it again in the present volume extensively in connection with open-market policy (pp. 57-72), with the determination of investment and income (pp. 140-60) and with the refutation of the quantity theory (pp. 164-66). Since he admits that the significance of liquidity

preference is confined to short-run income analysis, one wonders why he accords it such generous treatment. The prominent rôle assigned to this tool of analysis is perhaps partly attributable to the fact that Schneider has developed an especially elegant way of dealing with it verbally, geometrically, and algebraically.

Mention should be made of the variant form of the liquidity function that Schneider uses to exhibit the relationships between interest rate, income level, and money supply by curves expressing the relationships between the first two of these variables with the third as parameter. These curves show the combinations of interest rates (determining the size of speculative cash balances) and income levels (determining the size of transactions cash balances) that can be accommodated by fixed quantities of money. Schneider, following Hicks, draws such curves with horizontal and vertical ends, indicating that the interest-elasticity is infinite at low interest rates (because of unlimited absorption of speculative cash) and zero at high income levels. This zero elasticity—since Schneider wants income to be understood as real income or money income with constant prices (p. 97)—must be due to a ceiling velocity of circulation preventing any higher income levels from being financed with a given quantity of money. Schneider, at one point, attributes these vertical ends of the interest-income curves to the fact that "with a given amount of money a definite money income cannot be exceeded, for reasons of liquidity preference alone. Higher incomes are possible only with a larger quantity of money" (p. 148). At another point, however, he attributes the vertical end of such an interest-income curve to "full employment" (p. 149); but the effects of full employment would be more correctly described by a family of these interest-income curves converging on a single vertical stretch, indicating the fact that no further increase in the quantity of money can succeed in promoting an income level beyond the full-employment level.

Schneider's exposition of pre-Keynesian, Keynesian, and post-Keynesian multiplier theory is the most useful part of the book. The quotations from N. Johannsen's early formulations of that theory, in 1903 and 1913, are very interesting. In the presentation of the Keynesian apparatus Schneider shows himself as one of the master-teachers of our time. I should like to point especially to the discussion of the savings function (p. 116) and of the interdependence of Keynes' (supposedly independent) fundamental functions (pp. 139-47). In presenting these relationships Schneider takes advantage of the ingenious methods developed (in Swedish) by Tord Palander.[1] It is made very clear why the Keynesian multiplier formula fits only a special case, namely, the very special assumptions that the interest-elasticity of investment is zero or the interest-elasticity of liquidity preference is infinite. A general multiplier formula is presented, containing terms taking account of income-induced changes of the interest rate and of interest-induced changes of investment (p. 151).

Schneider earns the characterization of his text as the most modern and up-

[1] T. Palander, "Keynes' almänna teori och dess tillämpning inom ränte-, multiplikator- och pristeorien." *Ekonomisk Tidskrift,* 44, 1942, pp. 233 ff.

to-date when he includes such recent discussions as Haavelmo's "multiplier effect of a balanced budget" (pp. 198-202) or Patinkin's, Hansen's, and others' views on the "Pigou effect" of continuing price reductions (pp. 158-61). But, as I said before, Schneider is modern also in the problems which he chooses to omit. This reviewer is particularly troubled by the fact that a three-volume text on economic theory, by an author who on many issues is an intellectual descendant of Wicksell, should be completely without any discussion of, or even reference to, capital theory. Of course, the pure theory of capital or of the time structure of production is relevant chiefly to a long-run analysis of income, and this the author has explicitly excluded from the scope of his book (pp. 93 and 178). But is there a good excuse for such an exclusion from a three-volume treatise on economic theory?

At one point of the present volume Schneider tries, as he has in the first volume, to contrast *ex ante* and *ex post* conceptions in economic analysis. This is what he says: "If we know the consumption planned by households for a future period . . . and the net investment planned by business firms . . . , then we are able to say what the resulting income will be if the plans of the households and firms are realized" (p. 93). How true and how useless! Yet, this statement is regrettably typical of much of our modern theorizing. Too often do we forget that one of the foremost tasks of economics is to explain and predict circumstances under which consumption and investment plans cannot be realized. And it is my conviction that capital theory is needed precisely for that task.

These remarks may seem to contradict my appraisal of Schneider's work as one of the most comprehensive of modern texts in economic theory. But there is no contradiction since capital theory is now generally out of fashion and its neglect is common to all modern texts. Thus my criticism is not directed against Schneider but rather against current fashion in economic theory. Indeed, I expect that most readers will side against the critic and with the writers who have expelled from economic theory the most complicated part of economics. This old-fashioned reviewer dares to predict that capital theory will be called back from its exile, for the concern with the economic problems of underdeveloped countries will eventually demonstrate that the lack of capital can neither be made good nor more palatable by a lack of capital theory.

FRITZ MACHLUP

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Economic Anthropology. By MELVILLE J. HERSKOVITS. (New York: Alfred A. Knopf. 1952. Pp. xiii, 547, xxiii. Text ed., $5.75.)

This book is a complete revision of the author's earlier work, which in the first edition (1940) was entitled *The Economic Life of Primitive Peoples.* Both the scope and analytical categories remain substantially the same. The principal changes consist of an introductory, theoretical chapter on "Economizing and Rational Behavior," a considerably expanded (though by no

means exhaustive) sampling of the relevant literature appearing within the intervening twelve years; expanded treatment of motivation and rewards for work (now two chapters instead of one); and a somewhat fuller treatment of the value concept and of the capitalization process in these societies. In this edition Herskovits also relates his general discussion and illustrative materials to a broader representation of economic theories.

As in the first edition, the "primary concern in these pages is to understand the cross-cultural implications of the process of economizing," with primary emphasis upon the "role of alternatives between which to choose . . . and the problem of attaining efficiency through choosing" (p. 4). Cultural factors, it is stressed, delimit not only the choosing but also the nature of wants themselves and the exchange system for the provision of goods and services.

It is apparent that, from the nature of the societies which he conventionally studies, the anthropologist finds the approach of institutional economists more congenial to his material. A perusal of the literature, for example, reveals the significance of gift and ceremonial exchange as the primary mechanism of circulating goods within a group. While the economic rôle of these processes can be readily traced in terms of magnitudes, frequency of occurrence, and personnel involved, the forces that determine their operation are mainly noneconomic: kinship, neighborliness, fear of sorcery, marital ties, etc. The concept of equilibrium, therefore, would have to be related not merely to the ratio of income to outgo in the society as a whole, but also to "motivation and the balance felt by the individual in his functioning capacity as a member of society" (p. 173).

Comparative study of economic behavior based upon peasant and primitive type societies poses certain difficulties for the economist, who might wish to draw upon a wider empirical base in support of his principles and propositions. Perhaps the foremost of these is the fact that such societies generally constitute small groups in which the intimacy of interpersonal relations is widespread. Kinship and familial reciprocities flavor all areas of activity. In addition to material inducements, incentives to work, for example, are caught up in varying patterns of mutual responsibilities based on these and related factors. Individuals discharge their responsibilities consistently as much in accordance with attitudes toward social (nonrational) as with those toward economic (rational) efficiency.

In the same way that the comparative analyses of cultures and societies by anthropologists contribute principally to sociological theories of small group behavior as compared with mass behavior, economic anthropology might be expected to contribute to middle-level hypotheses geared to the context of such groups. Propositions of this kind and the conceptual apparatus upon which they are based should be very useful for the empirical study of western economic behavior and institutions at the community level. Indeed it is only at the upper range of technological and societal complexity among folk-type societies that we encounter something like a classical economic system. Thus among the Panajachael of Guatemala we find local specialization in a competi-

tive market, buying and selling for cash, prices geared to supply and demand, with rates made on the basis of cost estimates (p. 235). Capital formation here as elsewhere, however, is minimal and does not occur in accordance with values of growth or progress.

The author has chosen to limit the parameters of his analysis so as to exclude the processes of change. This is perfectly permissible, but as he has adopted the title, *Economic Anthropology,* the reader might feel entitled to learn something from the considerable literature on changes in process among folk and primitive societies consequent upon the diffusion of Euro-American technology and socio-economic values. This omission is all the more lamentable in view of the extremely important increase in interest on the part of economists in theoretical problems of growth and development.

As a final comment, this reviewer would like to suggest as perhaps a more felicitous organizational framework for such a volume, a chapter or two pulling together theoretical considerations and problems discussed throughout, followed by a series of rather full case studies of nonwestern economic systems. The considerable range of variation among so-called primitive societies, as regards degrees of isolation, complexity, population size and density, makes this approach desirable, as well as more amenable to critical analysis by the student, than does the juxtaposition of isolated examples of bits of behavior in support of widely scattered general statements. There is presumably a high degree of interdependence of the parts of any such system. A good model for a brief introductory section as envisaged here is a splendid chapter by R. Firth on "The Social Framework of Economic Organization" in a recent volume entitled *Elements of Social Organization* (1951).

Like its predecessor the volume in review will be of primary value to the economist in demonstrating " . . . some of the discrepancies between [his] assumptions about non-pecuniary, non-machine economies and the actualities of primitive production, exchange and consumption."[1]

BERNARD J. SIEGEL

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Economics: Trends and Issues—A Book of Readings. Edited by SCOTT KEYES. (New York: Russell F. Moore Co. 1952. Pp. ix, 508. Paper, $2.90.)

The present collection of article reprints, intended as supplementary reading for the beginning student, enters its struggle for market survival in competition with recent collections by Gayer, Harriss, and Spencer (1951); Hess, Gallman, Rice, and Stern (1951); Isaacs, McKee, and Slesinger (1952); and Samuelson, Bishop, and Coleman (1952)—among others. It is a rare anthology that pleases all, and there is always the temptation (in the absence of some solicitous publisher who would issue separately bound individual articles) for each economics department to compile its own "best" offering.

[1] From a review of the first edition by C. M. Arensberg, *Am. Econ. Rev.*, Sept., 1940, XXX, 595.

Keyes's book contains an impressive list of contemporary contributors, drawn with few exceptions from the ranks of professional economists. The articles give a beginning student an excellent sampling of many current economic problems and the techniques used by those working on them.

Part I is the usual sort of introductory section on the scope, method, and need for economics. Aside from an informative excerpt from the 1949 Report of the Council of Economic Advisers, there is an unusually well-written and appealing lead article entitled "It's Political (Repeat Political) Economy." The book's long second part is an exposition of "Basic Characteristics of the American Economy," and features such authorities as A. A. Berle on industrial concentration, Hauser on Census trends, and Leontief on the cost-price structure. Methods of economic measurement are explored further in the third section, with Commissioner Clague holding forth on the Bureau of Labor Statistics Consumers' Price Index, and Richard Ruggles contributing a most useful chapter on national income accounting in relation to policy decision-making.

Part IV covers Keynesian economics and the sort of model-building and forecasting attempts to which it has given rise. Gerhard Colm discusses the Nation's Economic Budget, and there are illustrations of the current investigations by the Survey Research Center and by the Department of Commerce into determinants of consumer and investor behavior. Various policy problems are considered at some length in Part V, with the authors ranging from the members of a recent American Economic Association subcommittee on economic instability to Paul Douglas on the welfare state and Gordon Gray on foreign economic policy. A final section presents, all too briefly, a potpourri of J. M. Clark, Polanyi, and Schumpeter on economic thought, economic development, and comparative systems. The section concludes with the United Nations comparison of seventy countries' national and per capita incomes which, even after severe statistical qualification, retains a powerful impact.

In his preface, the author claims four major virtues for his book as compared with similar compilations. First, all the articles included date from the post-World War II period, with many only a year or two old. This immediacy of the writings may well give students an "up-to-date" view of economic problems and policies, but if not offset by classroom references to earlier works might equally well lead to an impression that all worth-while thoughts in our venerable science have been uttered only in the last few years. Those teachers, therefore, who desire to instill some acquaintance also with earlier giants of the field will not consider this distinctive feature an unmixed blessing.

A second distinguishing characteristic, suggested earlier, is that all the selections are from professional (including governmental) sources. This approach has resulted in a consistently high caliber of performance which ought to please economists. But again one might question why students should not also have been exposed to some other sources, ranging from Marxist tracts to National Association of Manufacturers releases, such as they may or should debate in their own everyday lives. The third point, that almost all the articles are presented in uncut form, does seem an undeniable virtue. About half the

thirty-five articles (far fewer than in other compilations) run from 10 to 15 pages, avoiding the usual pitfalls of excessive length or fragmentation.

Finally, the material has been selected with especial emphasis on means of measuring, and actual appraisals of, the changing developments of the past two decades. This approach produces a slighting of relative-price and allocation problems to a degree probably greater than is merited. In this sense the volume would serve more usefully as a supplement to introductory courses in income and employment than to those in price theory.

On the whole, though, it seems a virtue of this work in comparison with others of its sort that it does not dilute its coverage in an attempt to be all things to all courses. While the need for books which link beginning students with contemporary problems is even more pressing (because more difficult) in the fields of price, allocation, and market theory, within the scope he sets for himself Professor Keyes has given us a most useful educational tool.

David N. Milstein

Stanford University

The School of Salamanca: Readings in Spanish Monetary Theory, 1544-1605. By Marjorie Grice-Hutchinson. (New York: Oxford University Press. 1952. Pp. xii, 134. $2.50.)

The author of this little volume holds that Spanish writers have a claim to recognition in the development of economic thought which has been overlooked. She believes that this is especially true of the sixteenth and seventeenth century scholars identified with the University of Salamanca. In her appraisal of this group, Professor Grice-Hutchinson concludes that they made original and useful contributions in three important respects: a psychological theory of value applied to both goods and money, the quantity theory of money, and a theory of foreign exchange closely resembling the modern purchasing-power parity theory (pp. 47-48, 58).

The translations from original texts confirm her thesis that members of the School developed their idea of value around the concept of scarcity and utility (pp. 48, 36). Domingo de Soto set the pace when he declared that "the price of goods is not determined by the wish or convenience of individuals, but by the community," and added "that is by common estimation" (p. 83). He concluded that "prices rise when buyers are numerous and fall when they are scarce. Likewise, prices fall when sellers are numerous and rise when they are scarce" (p. 86). In a carefully documented chapter the author traces the influence of the Spanish writers through Grotius, Pufendorf, and Hutcheson, but fails to connect the statements on utility and rarity of Galiani, Condillac, and Turgot with the Spanish writers.

In the opening chapter, the author says, "the whole Spanish nation had learned by the middle of the sixteenth century that the value of money is fickle and that gold and silver are not synonymous with wealth" (p. 1). She contends that prices rose first in Spain, and that Spanish writers were first to note and trace the causes of the price revolution. Martin de Azpilcuetta

Navarro noted the influence of gold and silver on prices in Spain and applied the theory of demand and supply to money. His exact statement is, "And even in Spain, in times when money was scarcer, saleable goods and labor were given for very much less than after the discovery of the Indies, which flooded the country with gold and silver. The reason for this is that money is worth more where and when it is scarce than where and when it is abundant" (p. 95). Tomás de Mercado, however, seems to have the typical mercantilistic outlook (p. 96). In view of the mercantilistic legislation in Spain and the prevalence of mercantilistic tracts cited by Earl J. Hamilton in his studies of Spanish prices and Spanish mercantilism, some question remains as to how well the Spanish had learned the lesson.

Professor Grice-Hutchinson asserts that Navarro was the first writer to mention the influence of the imports of American gold and silver on Spanish prices and that his analysis of the quantity theory of money anticipated Bodin by twelve years. A comparison of the two writers reveals that Bodin was more thorough and there is little doubt that it was through the work of Bodin that the concept entered the field of economic literature.

The most original contribution of the School of Salamanca centered around their explanation of the variation of the exchanges. Here they definitely connected the price levels of the countries with favorable or unfavorable rates of exchange. While their version of the purchasing power parity was interesting and useful in relation to the question of exchanges and usury, any direct influence on later advocates of this theory came through Malynes and Mun rather than the Spanish writers

In providing an English translation of these early Spanish tracts on monetary thinking, Professor Grice-Hutchinson has filled a gap in this chapter of the history of economic thought. Teachers and students will welcome her careful and lucid appraisals of the School as well as the availability of the original texts.

RECTOR R. HARDIN

University of Georgia

The Development of Economic Thought. Edited by HENRY WILLIAM SPIEGEL. (New York: John Wiley & Sons. London: Chapman & Hall Ltd. 1952. Pp. xii, 811. $6.50.)

The history of economic thought abounds in good texts, long and short, analytical and descriptive, topical and chronological. There are also useful books of readings, masterworks, and compilations of short selections from the important writings of great economists. The volume under review is distinctly different. It is a history of economic criticism in the form of a collection of appraisals of the contributions of outstanding economists by later economists. In short, the book contains many of the best statements about the most important figures in the history of economic thought.

This volume by Professor Spiegel, therefore, supplements both texts and readings in its field by providing additional material of high quality in acces-

sible form. It gives the student better perspective by substituting the varied viewpoints of many observers for that of one scholar. It permits him to see how important economists have been regarded by different competent critics, and to discover how well they have met the issues of their day and have stood the test of time. The "craftsmanship" approach to this history of economic criticism is as unique as it is valuable and stimulating.

The book, consequently, should become popular in courses in the history of economic thought. Brief, helpful editorial notes introduce the various selections, some of which are familiar classics but others of which are new translations by the author of less familiar articles. The volume has a succinct foreword by Kenneth Boulding; there is also an explanatory preface by the editor. The index seems adequate. As will be shown, the coverage of the book is wide, and its organization is excellent.

The Dawn of Economic Science (the first part) gives Aristotle on Plato, Tawney on medieval economic thought, Heckscher on Mercantilism, Jevons on Cantillon, Smith on the Physiocrats, and Spiegel's own translations of Einaudi on Galiani and of Marx on the Physiocrats.

The Classical School (the second part) contains the article by Paul Douglas on Smith, those by Bonar, Fay and Keynes on Malthus, by McCulloch and Marshall on Ricardo, that by Mill on Bentham, by Viner on Bentham and Mill, by Cairnes on Bastiat, and by List on Say.

Socialists and Reformers (the third part) is rather short and seems insufficient. It includes articles by Halévy on Sismondi (editor's translation), Foxwell on Ricardian Socialists, Cole on Owen, Veblen on Marx, Hobson on George, and Tawney on the Webbs.

Historical and Institutional Approaches (the fourth part) is short but adequate. It contains Schmoller on Roscher (editor's translation), Mitchell on Veblen, Perlman on Commons, and Arthur F. Burns on Mitchell.

The Rise of Marginalism (the fifth part) is longer and even more valuable. It contains articles by Schneider on Thünen, Fisher on Cournot, Walras on Gossen (editor's translation), Keynes on Jevons, Hayek on Menger and Wiesser (editor's translation), Schumpeter on Böhm-Bawerk (editor's translation), Hicks on Walras, and J. M. Clark on J. B. Clark (previously unpublished article).

The Growth of Modern Economics (the sixth and final part) is short but helpful; it is naturally the most controversial as to what to include and what to exclude. It contains articles by Arthur L. Bowley on Edgeworth, Demaria on Pareto (editor's translation), Frisch on Wicksell (new article), Robbins on Wicksteed, Viner on Marshall, Haberler on Schumpeter, Samuelson on Keynes, and Colin Clark on Pigou (previously unpublished article).

The reviewer has little fault to find with what has been included in this collection of criticisms in the history of economic thought. His chief lament is the omission of important writers and entire schools of thought. The omitted schools include the Idealists or Moralists (except for Halévy on Sismondi and Hobson on George). With regard to individual writers, a few pages might well have been given to Marion Bowley on Nassau Senior. The obvious answer to

the criticism that whole schools of thought have been omitted is, of course, the limitations of space. Also, time has dimmed the importance of such once-famous optimists as Carey and his followers, even in America.

S. HOWARD PATTERSON

University of Pennsylvania

Economic History; National Economies; Economic Development

Trade and Industry in the Middle Ages. Edited by M. POSTAN and E. E. RICH. Cambridge Economic History of Europe, Vol. II. (New York; Cambridge University Press. 1952. Pp. xvi, 604. $9.00.)

Volume I of this series, published in 1941 and dealing with medieval agrarian life, announced in its preface that Volume II would be "urban, industrial and commercial." The general design was for an economic history of Europe, "or of the world as it impinges on Europe," starting formally from the later centuries of the Roman Empire. War and its aftermath removed contributors and cut off areas beyond any normal expectations. The schism of Europe concentrated upon the western part an emphasis which was planned for the whole continent and is particularly unfortunate for a discussion of industry and trade. Urban problems, defined as the growth, economic policies and finances of towns, together with "the history and policy of craft gilds" are now put over to Volume III, already slated to deal with medieval credit, finance, coinage, prices, state economy and economic thought.

In thus modifying a plan which had the advantage of corresponding roughly with university syllabuses, textbooks and the specialization of research, the new editors state that the earlier plan would have overloaded the second volume and was no more logical than the substitute. They admit that "background" topics such as prices, population and economic trends should be incorporated, not put off to the final volume on the medieval period. What this chiefly means in practice is their inclusion in Postan's tremendous (132 pages) chapter on medieval North-European trade. The reviewer wonders if this was the reason for placing his chapter before Lopez's chapter on medieval South-European trade. Considering his position in the craft, the rounded statement of Postman's interpretation may well compensate for more detailed chapters unavoidably lost.

However, a volume which is even more west-European in outlook than the first makes a notable concession with respect to the temporal starting point. An opening chapter by Gordon Childe discusses the industry and trade of "barbarian Europe" through stone, bronze and two iron "stages," down to Roman times. Like Heichelheim years ago, he sketches the distribution over great distances of products of basic industry—such as flint and obsidian points and edges—before written records. He also stresses the importance for economic development of trade in ornaments and other luxuries. This position seems difficult to harmonize with Postan's.

Chapters on Rome and Byzantium by Wilbank and Runciman are inter-

esting and informing, but seem to the reviewer too specific for a work of general synthesis. There is little to suggest the perennial movements out of Asia or a westward movement of settled life along both sides of the Mediterranean which was far from complete when the Roman Empire in the West broke up. That the Romans occupied only about half of the Atlas highland region of Africa and little of the Sahara is a fact with large reverberations in medieval and modern history. The way in which the Moslems completed the occupation, trade relationships between Spain and Africa during the great development of Moorish intensive agriculture, and the whole problem of Africa as a "granary" of Europe from Caesar Augustus to Lebrun and Daladier have surely "impinged" upon Europe more than incidentally.

The figure of 10,000,000 bushels for Rome's grain imports from Africa (p. 47) rests on no substantial evidence, and tends to distort the problems of population and food supply. Victor Demontès arrived at it in 1925, Tenney Frank in 1940, by putting together casual statements of Flavius Josephus and Aurelius Victor, made three centuries apart. Frank seems to have been aware that it is absurdly large for the number of mouths. Close students of the African area (roughly present-day Tunisia and the Department of Constantine) are roughly agreed nowadays on a maximum of some 3,000,000 bushels, and accompany any such figure with the warning that most crops in this erratic climate must have afforded less, some no exportable surplus at all.

One gets the impression of a more populous Roman Gaul from this volume than from the first. A treatment of thinly documented commerce over a long period has an almost unavoidable tendency to yield an exaggerated picture. Statements of absolute quantities in discussing earlier societies have the opposite tendency, whether comparisons with our time are made or left to the reader. Several of these authors quite properly insist that the volume of trade is a function of a particular society and situation, and is best not mentioned out of its setting.

Postan discusses the problems of quantities and records of quantities in medieval North-European trade after noting the character of the commodities exchanged and their approximate order of importance. His emphasis on interregional trade in staples is no greater than, for example, Rörig's in his 1933 *Mittelalterliche Weltwirtschaft*, but Postan's argument has another facet. Insistence upon the predominantly staple character of trade within medieval northern or transalpine Europe is made to suggest the relative independence or separate development of the area, and hence by implication to combat any notion of a dominance-and-dependency relationship with the Mediterranean. Rörig, and back of him others including Sieveking and Davidsohn, have noted the importance of staple foodstuffs, textiles, raw materials and other nonluxury items in Mediterranean trade, as does Lopez in this volume. Moreover, as Schulte, Rörig, Braudel and others have explained, staples were fairly important in the interregional trade between the Mediterranean and the North. Finally, as the various societies were organized, trade in luxuries was not necessarily unimportant or even indecisive for development, as Childe has noted in this volume. Consistently with his position on staples, Postan is

allergic to explanations of development as responding to changes in the supply of monetary metals or in prices. He is careful (*e.g.*, p. 166) to note that he is not arguing against such explanations as applied to later centuries. Like Rörig and others, including Usher, he stresses the importance of frontiers in medieval economic development, and notes that Hanseatic trade was roughly at its peak when the League was founded.

The main innovation in Postan's version of Hanseatic policy as defensive rather than progressive is his correlation of German history with a long and general contraction or depression which scholars have stressed in varying degrees of late years. Roughly speaking, the Black Death of about 1347-1350 marks the onset of this period, though recurrent epidemics, the Hundred Years' War and other struggles of the time figure prominently in the asserted decline. Note that the Hanseatic League is dated roughly from the 1360's. Postan argues that Europe's population, cultivated area, production in general and trade all declined for something like a century, following a much longer period of growth. The prevalence of strong sentences about decay and weak sentences about growth in this immense and generally moving argument made at least one reader slightly uneasy.

Lopez has a much more restricted and moderate version of this interminable depression in discussing the Mediterranean area. Nef, in a chapter on mining and metallurgy which has a remarkably sustained continuity, would settle for about the same population in 1350 and in 1450. It may be recalled that Josiah Cox Russell (*Speculum*, 1945) believed in a decline of population from about 1348 to 1430, the latter time roughly marking a turning point. He relied mainly on demographic statistics. Postan presents a great variety of evidence, which is quite proper, but the reviewer got an impression that the meager population figures tended to disappear in the mixture. Consistent with its presentation of development in northern Europe as roughly equal and step by step with that in the Mediterranean region, Postan's chapter seeks to rescue medieval England within northern Europe from the relatively backward position which it has occupied in general accounts. This volume has no continental authors, as compared with twelve in the first.

In the other nuclear chapter, dealing with medieval trade in the South, Lopez has taken over less of the general subject-matter left homeless by failures of expected contributions to materialize. Considering his learning and his many revisionist studies, he here displays notable restraint, often retreating to sample cases on the ground that wider generalizations would be unsafe. Among the many revisions in this chapter, perhaps the most startling is that the fourth crusade was not diverted to Constantinople, but was so planned from the outset (p. 311, n.). The opening of the Black Sea to Latin traders was significant, but the crusade as such was a failure because Asia Minor was not taken. Two attempts to make Damietta in the Nile delta a Latin bridgehead failed, and the evacuation of the Holy Land for trading outposts on Cyprus and in Cilician Armenia was only a question of time. The only real disaster for the West resulted from a Papal ban on trade with Egypt, which the Catalans ignored, probably harming Venice and Genoa more than they helped themselves. Italian

business organization at the zenith of commerce and capitalism (his terminology), from the late 11th to the early 14th century, is discussed with tantalizing brevity. The great Italian diaspora by sea and land is placed in its historical setting. Having objected on page 338 to Pirenne's term "saturation" to characterize the crisis beginning around 1350, Lopez proceeds on page 344 to state almost exactly what people using the term have meant by it: in this case the end of frontiers and the tribulations of business organized on the assumption of continuing expansion but facing the reality of too many competitors for available markets. Like other authors of this volume, he thus explains a tendency toward defensive and regulative organization.

One slightly confusing feature of this volume is the variety of "middle ages." To Lopez, the period ends with the fall of Constantinople and the end of the Hundred Years' War in 1453. Postan generally carries it to about 1500. One of Nef's ten subdivisions is entitled "The Boom in Mining and Metallurgy, 1460-1530." Nef's chapter is itself a gold mine and hard to sample. The Romans, often accused of being unoriginal as engineers, are exonerated. They had quite deep mine shafts, as much as 600 feet, and their mechanical equipment as well as their processes were more advanced than any afterward to the 14th century. Nef makes one of the most interesting comments—amounting to a "saturation" theory—on the "great depression" of the latter middle ages. A tremendous and sustained medieval extension of settlement opened vast mineral deposits near the surface. Uses multiplied. In the end, shallow deposits began playing out much more rapidly than methods and equipment for deeper mining were developed. Nef's discussion of the generally free status of medieval miners, as compared with slavery and low esteem in ancient times, is most interesting. Another subject which he divests of countless illusions is that of regalian subsurface rights.

But the most informing chapter on medieval human relationships within a profession is that of Jones on building in stone. Somewhat like the merchant trading at a distance, the master or other mason typically operated largely outside his home area. Hence he was unusually free from local regulations. The prevalence of wages, and of even quite large-scale contracting, have been recognized especially since the author and Mrs. Knoop published their 1933 study on the economic history of English stone building in late medieval and early modern times. This work got long and enthusiastic reviews on the Continent. Jointly and individually, its authors have written much on the subject, but nothing which quite renders the service of this relatively brief synthesis.

Chapter 6, by Eleanora Carus-Wilson, on the woolen industry from the Romans to the triumph of English cloth is an illuminating discussion of a key subject. In the area around Flanders, the industry took hold because of the excellent wool and the situation for trade. Soon it outgrew the local supply of wool. English wool was the best, but there were competitors for it, clothiers in England itself eventually taking the major part and with it the market for cloth. Everywhere there was some danger that mere craftsmen would become organized, force participation in public affairs, and perhaps even get control of city governments. Only in Flanders did this occur on a large scale, and it

occurred at a time when the goose that laid the golden eggs was itself struggling for survival. The author has stuck closer to woolens than Rörig did to fustians, in an account which is vastly broader in effect than one industry together with the trade in its raw materials and product.

The extent and quality of the revisions presumably measure the importance of a volume such as this, consisting of syntheses by ranking experts. This book is well written, but not for babes—it is highly condensed and presupposes either some knowledge of history and geography or access to reference works. The advanced students, including teachers, to whom it is addressed first of all, will disagree with some judgments expressed. The reviewer thinks that some distortion has resulted from placing the chapter on northern Europe before that on southern Europe. Some factual statements may be questioned—not very many, I think, for it is competent work. The volume will be read, and will influence beliefs and interpretations, for many years. This is my excuse for writing so many words about it, knowing full well that it must be read in order to gain any sound appreciation of it.

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The Browns of Providence Plantations: Colonial Years. By James B. Hedges. (Cambridge: Harvard University Press. 1952. Pp. xviii, 379. $6.00.)

This book, the first of a projected three-volume history of the family, carries the story of the Browns of Providence Plantations from the date of the first ledger entry by Captain James Brown on October 9, 1723, down to the ratification of the federal constitution by Rhode Island in 1790. In tracing the business activities of the family through these years, the author has drawn upon an unusually complete collection of letters, journals, receipts, invoices, and contracts. The result is a significant contribution to our understanding of the colonial business man; one that compares favorably with William T. Baxter's study of *The House of Hancock* or V. D. Harrington's book on *The New York Merchant on the Eve of the Revolution.*

Like most of their contemporaries among the colonial merchants, the Browns were ready to consider almost any venture that gave promise of financial reward. This led them to engage in such diverse activities as trading along the Atlantic and Gulf coasts and with the West Indies, hauling slaves from Africa, writing marine insurance, trading with England, sending out whaling expeditions, trafficking with the enemy, blockade running, and privateering. But the Browns were more than merchant shipowners. They started grinding cocoa beans as early as 1752, their spermaceti candle works were in operation in 1753, and in 1755, they took the first steps leading to the construction of an iron manufactory that began turning out pig iron and hollow ware a year later. In fact, by 1765, ". . . the Browns had become manufacturers first and merchants second. When capital was available for business expansion, it went not into a larger merchant fleet but into another branch of manufacturing" (p. 123).

These various activities are described in considerable detail and much new information is made available, especially in the chapters on the manufacture and distribution of candles and iron products. The author brings out very clearly how the diverse parts of the business were all integrated into a well functioning administrative unit. Multiple operations were in themselves insurance against risks that attended almost every phase of operations. The Browns were skillful in adapting their business to circumstances that changed frequently and sometimes violently.

According to the author, the members of the family were not endowed with any uncanny ability to foresee the future turn of events. "The secret of their long-sustained success lay primarily in the personal qualities and business methods of the family" (p. 329). Careful planning went into providing leadership from one generation to the next. "A younger brother, a son, or a nephew well trained by his elders was always ready to assume the responsibilities of leadership at the proper time" (p. 329). Interest in perpetuating a family business prompted a subordination of short-term profits to a long-run view of operations. No important move was undertaken without careful planning, be it a project to corner the tobacco supply for shipment to Surinam, or a decision to equip a privateer. These same considerations apparently account for the fact that the Browns were seldom innovators in the strict meaning of the term. Obadiah Brown in 1736 was the first Providence merchant to engage in the slave trade, but this was long after the Newport captains had shown the way. The Browns were not the first to manufacture spermaceti candles in the new world and they drew heavily on the experience of Pennsylvania iron producers in the construction and operation of their own furnace.

These points are well made and emerge logically from the more detailed accounts of the business. There are, even so, some aspects of the family's policies and practices that are not entirely clear. Why, for example, did the Browns trade with the Dutch rather than the British West Indies? Why were their first connections in England with merchants in Liverpool and Bristol and not London? Was this, as one reviewer has suggested, because the Browns did not belong to the elite class of colonial merchants, came from Providence and not from New Port or Boston, and lacked proper social and governmental connections?[1] Would missing records or a closer examination of existing documents give a clearer picture of the business arrangements within the family and with outsiders on particular ventures? Is the impression gathered from the narrative correct, that at no time after 1723 was the raising of capital funds a limiting factor on expanding operations? Could such funds always be provided from within the business or when the Browns joined with others on particular projects was it to obtain financial support and not simply a measure designed to distribute risks?

But the raising of these questions is more of a tribute than a criticism of a study that by its excellence makes us eager for others of equal quality.

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[1] Bernard Bailyn, "Hedges' Browns: Some Thoughts on New England Merchants in the Colonial Period." *Explorations in Entrepreneurial History*, May 15, 1952, IV, 229-83.

Studies in British Financial Policy, 1914-25. By E. VICTOR MORGAN. (New York and London: Macmillan. 1952. Pp. xii, 380. $6.50.)

Of interest primarily to the specialist in British finance, these studies are also of interest to the general student of "defense economics." They tell the much-told tale of the great changes that came over the British financial economy from the outbreak of World War I to the return to gold in 1925, but tell it with the help of previously unavailable data and the better analytical tools that are a legacy of the "Keynesian revolution."

The book is divided into four parts. Part I, "Preliminaries," describes the financial crisis following the outbreak of war and the emergency measures taken to combat it; the growth and abandonment of "direct" wartime controls; and general movements of economic activity over the entire period. Part II, "Government Finance," deals with expenditure, revenue, borrowing and conversion operations, the changing structure and distribution of the national debt, and movements of interest rates. Part III, "Money, Credit and Prices," describes the wartime currency arrangements, and the activities of the Bank of England, the money market firms, and the joint-stock banks. The chapter describing price movements includes a useful analysis of the "mechanism of price changes" along modified Keynesian lines. Part IV, "External Problems," analyzes the balance of payments on current and capital account, external wartime borrowing and lending, and exchange rates. A concluding chapter summarizes the findings of the studies as a whole.

The presentation and derivation of statistical series and estimates occupy a very large number of pages. Only the hardy explorer of the jungle that is British financial statistics will find these fascinating. One can only see the importance of the book by reference to its final chapter. Yet there, as well as tucked in among the statistics, are judicious criticisms of financial policy and generally well-balanced judgments of the importance of various causal factors in the inflation, the deflation, and the mid-'twenties slump.

The author's main conclusions can be briefly summarized. "Budgetary policy was the major cause of the steep price rise of 1915-17 and of the controlled inflation which continued during the closing phases of the war." (It is evidence of the progress made in the theory of wartime finance that only a generation ago the British government thought it "sound" wartime finance to impose new taxation only sufficient to meet the rising interest charges and a sinking fund on the increased national debt.) Fiscal policy is seen as an *active* inflationary force only up to mid-1917, however; thereafter "the deficit played the role not of creating new demand, but of sustaining the Government's existing purchases in the face of rising costs." During this latter period Morgan considers the main weakness to have been uncontrolled wages.

Monetary policy, while fumbling, is seen as only a minor villain in the wartime inflation. "It is one of the main theses of these studies that money and credit exercised a permissive rather than a causal influence." The Bank of England was hampered in its monetary control by an influx of gold and "automatic" issue of currency notes and Ways and Means Advances to the Treasury. But, in the main, technical devices and Bank-Treasury co-operation overcame

these difficulties. There is no suggestion that monetary policy could have done much more to prevent inflation.

In the brief postwar boom, Morgan finds, "Government finance . . . ceased to have any directly inflationary effect." Direct controls were relaxed too soon. Interest rates, though very high, were perhaps not raised high soon enough. But the boom was mainly brought about by rising consumption expenditures, a burst of private investment, and a sharp change to a large favorable balance on current international account, conditions largely beyond practical control by monetary policy.

Morgan criticizes most severely the handling of the slump of 1920-21, and the semislump of 1922-25. Substantial budgetary surpluses aggravated the malady, as did the maintenance of high Bank and market interest rates in 1920-21. "The extreme eagerness" to reduce the short-term debt by funding operations, an attitude based on "a widespread misunderstanding of the dangers associated with the floating debt" was especially injurious. "Once the boom had broken, spending required not restraint but stimulus." A more liquid debt structure and further broadening of the cash base "would have done nothing but good."

Morgan finds little evidence, on the other hand, for the view that monetary policies aimed at a return to gold at prewar parity were a serious depressing influence in 1924-25. "Both deposits and advances were maintained at high levels and short-term rates were moderate, while the fact that long-term rates were higher than before the war was due to conversion operations rather than banking policy." Here, it seems, Morgan has failed to give proper emphasis to the *trade* disturbances caused by the rise of sterling. He rightly points out that the wartime destruction of Britain's short-term creditor position, and the worsening of her general trade position, were serious difficulties regardless of the level of sterling. But this further impairment of Britain's competitive position, plus the greater measure of domestic monetary and fiscal austerity required to achieve and maintain prewar sterling parity, certainly aggravated these difficulties.

Morgan's gifts to the statistical jungle-fighter are substantial. He has obtained from the Treasury and the Bank of England hitherto missing data on such important matters as: the operations of the "British Treasury Account in New York" (through which was channeled a large part of Britain's external war finance); British wartime loan transactions with belligerents and neutrals; and wartime gold production and management. These hitherto secretive institutions also provided Morgan with numerous pieces of technical information bearing on their domestic operations during the war. (Still kept secret, interestingly enough, are such "vital" statistics as the nature of the securities held in the wartime "Currency Notes Redemption Account," a complete breakdown of "Government" and "Other" securities held by the Bank of England, and the amounts of wartime "Special Deposits" with the Bank.)

On the basis of these new data, plus judicious use of published statistics and earlier studies, Morgan makes many improved estimates. Such include: *internal* wartime government expenditures and revenue; the impact of the war on the

distribution of holdings of the national debt; a complete wartime balance of payments on current *and* capital account; and the wartime deterioration of Britain's net short and long-term creditor position. Morgan's work will be a valuable source book for close students of British financial history.

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Economic Forces in American History. By GEORGE SOULE. (New York: William Sloane Associates. 1952. Pp. viii, 568. $4.75.)

The structure of George Soule's economic history of the United States is unusual. The first 218 pages (Part I) relate to developments prior to 1900, while a larger portion of the text, the next 313 pages (Part II), covers merely the first half of the twentieth century. The emphasis on recent history is explained by the author as the result of an endeavor to illuminate the current scene, which exhibits a much greater complexity of the economic process than do the earlier years. The first part of the book begins with a brief chronology of events up to 1900. This is followed by a statement of seven themes for the period and an equal number of chapters—one dealing with each theme and each introduced by a short summary. In Part II the order of presentation is reversed: seven chapters dealing with particular topics are followed by a four-chapter chronological coverage of the post-1900 period.

To present a detailed discussion of the most important topics and at the same time to make the reader conscious of the broad aspects of development is the most difficult task of the historian. Each section of Soule's book, whether it is a discussion of one topic over time or a general chronology of events, provides a good description supplemented by an adequate amount of what might be called "short-run" analysis. The book is essentially a collection of very good essays, which are not effectively tied together—as far as this reader is concerned—despite the author's use of chronologies.

The failure to give the reader a feeling of economic development is a serious defect and has a two-fold basis. Part II is quite independent of Part I; it is as if the post-1900 events had no relation to those that preceded. Secondly, the author neglects to stress the broad underlying forces that account for general developments. His explanations of developments are in terms of short-run phenomena. A prosperous period, for example, is explained in terms of what has taken place in the immediate past (or takes place as prosperity grows) in agriculture, in certain specified manufacturing industries, etc. But, except for a chapter dealing with technology, no more than passing references are made to long-run forces of development. No stress is laid on the widening of the market for goods that occurred as a result of railroad expansion, and no connection is built between the widened market and a number of phenomena of the late 19th and early 20th centuries: the "trust" problem, the labor problem, various problems of urban growth, and so forth. Concerning the automobile, it is just as necessary, it seems to me, to write in terms of the wider market it has given labor and the numerous long-run repercussions of such a

widened market, as it is to write in terms of the changes in the demand for (and supply of) automobiles and the repercussions of these changes on a phase of a given business cycle. The latter Soule does well; the former gets no attention. Such omissions give the book a lack of unity that evolutionary threads would provide.

In many ways the presentation is very good. After the reader gets over the first few pages of "fine" phrases, the separate chapters will appear as excellent essays. This is particularly true of the chapters of Part II where the author treats technology and the volume of production, various aspects of national income, the rôle of money, international economics, the labor force, the ups and downs of the farmers, the relations between government and business, and the events of the last fifty years in a well-organized running account. Some readers may object to the favorable attitude toward the increasing rôle of government in the economy, but only ardent opponents of intervention will be offended. The short-run forces are very well handled, but the scant treatment of the long-run, basic, fundamental forces is disappointing in a book entitled *Economic Forces in American History*.

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Report on Cuba. Report of a Mission of the International Bank for Reconstruction and Development. (Washington: International Bank for Reconstruction and Development. 1951. Pp. xxiv, 1,049. $7.50.)

This book, the work of sixteen authors who comprised an International Bank Special Mission under Francis A. Truslow, is a virtual encyclopedia on the economy of Cuba. There are chapters on topics ranging from Mineral Resources to A Bag Mill for Cuba. The first two chapters present the diagnosis and recommendations, while the remaining 48 chapters cover specific problem-areas that are relevant to an analysis of the development task in which Cuba is engaged. The book abounds with descriptive material of significant reference value.

As would be expected, sugar is the target of extensive critical analysis. The dominant theme is that too large a part of Cuba's total economic effort is in sugar and not enough in a diversified list of other products. Sugar is a seasonal industry, offering employment mainly over a period of four months beginning in the middle of winter. Moreover, the product is subject to the vagaries of price fluctuations traceable to Cuba's rôle as a residual supplier in the world market. By diversifying its output, Cuba could make more effective use of labor resources, reduce the impact of varying prices and export outlets for sugar, and perhaps moderate the disincentives of the unenterprising gambling spirit that is said to be a by-product of heavy reliance on the changing fortunes of sugar.

A variation on the main theme is labor policy, particularly the high wage demands and featherbedding that characterize contemporary Cuban labor. Such labor demands and practices, we are repeatedly told, constitute a stum-

bling block to industrial and agricultural diversification that is only second in importance to the national habit of pinning hopes on sugar. If there is anything to the idea that wage levels are established in export industries, however, it seems to me that the complaints of Cuban development enthusiasts and the Mission really demonstrate the strength of sugar's comparative advantage rather than many of the things mentioned in this *Report*.

Another point that recurs throughout the volume is the reluctance of Cubans to invest their savings in ways that accelerate the economic diversification of the economy. There is too much investment in real estate and American securities, and too great a propensity to hold idle balances. But are rates of return, the necessary allowances being made for special (and very great) risk factors, really more attractive in many of the lines that accord with the diversification thesis? Since there is little in the *Report* to indicate that the motivation of Cuban investors is significantly different from that of our own people, one wonders whether anything like the appropriate allowance for risk is made by those who are critical of Cuban investors. In fairness, however, it should be pointed out that the Mission calls attention to the need to improve the investment climate in Cuba. If this is done, and it can only be done by the Cubans, perhaps the resulting pattern of investment in due course will yield the much-desired returns in terms of a solidly based diversification of the economy. Domestic (gross) savings, incidentally, averaged about 13 per cent of Gross National Product during 1945-49 (p. 516)—a fairly respectable figure, even after allowance is made for the favorable position of sugar at the time. Although such an investment climate would do much to facilitate augmented foreign investment in the country, the *Report* is strangely silent about this aspect of the development problem.

Mention may also be made of several of the more important general recommendations of the *Report*. It calls for a re-examination of Cuban-American tariff preferences, urges that steps be taken (despite the restrictions of bilateralism) to expand the sale of sugar in Europe, recommends (with praiseworthy emphasis) against the establishment of a stee industry in the light of resource deficiencies, market size, and economic proximity to the United States, advises that policies should continue to stress the value of exchange-rate stability without exchange control, and recommends that monetary and fiscal measures which aim at general economic stability be restricted to those that are consistent with exchange-rate stability.

One misses a general statement of the theory of economic development, especially in its application to Cuba, a country that is among the most developed of the underdeveloped areas. If a chapter or two had been devoted to such a theoretical statement, readers would have been able to obtain a clearer idea of the Mission's conception of the development problem. We are all for economic progress in the form of rising per capita production, especially when it is not entirely or mainly at the expense of others than the nationals benefiting therefrom. In particular, such a theoretical statement would have been helpful by setting forth the chief assumptions involved. Moreover, I venture to assert that if a careful theoretical statement of about 5 per cent of the size

of the volume had been written, much of the descriptive material would have told a more persuasive story, the alternative opportunities for using labor during the "dead season" in sugar production would have been stated more effectively, the length of the *Report* considerably shortened and repetitive material omitted, and the necessarily slow process of development more clearly demonstrated. The last point in particular deserves emphasis. Strong emphasis on the process of development would have integrated the various parts of the *Report* and indicated in a more logical way the responsibilities of individuals, firms and government if given objectives are to be met. There is every reason to believe, however, that the volume should have more than a modest guidance value to the leaders of the Cuban community upon whom, in the last analysis, the task of development falls.

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The Economic Development of Guatemala. Report of a Mission sponsored by the International Bank for Reconstruction and Development in collaboration with the Government of Guatemala. (Washington: International Bank for Reconstruction and Development. 1951. Pp. xviii, 305. $5.00.)

Public Finance and Economic Development in Guatemala. By JOHN H. ADLER, EUGENE R. SCHLESINGER AND ERNEST C. OLSON, in collaboration with the Research Department of the Banco de Guatemala. (Stanford: Stanford University Press. 1952. Pp. xix, 282. $5.00.)

An International Bank Mission, headed by Dr. George E. Britnell, has surveyed Guatemala's potentialities for development "in order to enable the Bank to make recommendations with respect to the general directions in which such development could be most fruitfully undertaken and the conditions required for its success." In the report, published by the Bank, the Mission states that its development program has been influenced by three criteria. It has endeavored to allocate resources, first, "into fields which promise early . . . improvements in income and the standard of living"; second, into fields which promise cumulative improvements in income and the standard of living; third, to accomplish these two "without imposing an excessive strain on the country's ability to maintain a sound balance of payments position."

Accordingly, top priority is given to the promotion of coffee, the main export crop, and to the mechanized development of the richest but underutilized food-producing area. Coffee production offers the greatest possibilities for early returns and is also the "outstanding potential source of the increased revenue and foreign exchange needed to carry out a national development program." At the end of the tenth year of the proposed plan, the Mission expects coffee exports to be fifty per cent greater than the present level. The highway development plan, which accounts for a large percentage of total development expenditure, is also designed to facilitate the rapid expansion of valuable output which will produce foreign exchange quickly. The mechanized food pro-

duction program is expected to provide "a prompt and substantial increase in foodstuffs at reduced prices . . . [and] a better supply of raw materials for industry."

The first criterion which influenced the Mission's recommendations is an application of the marginal analysis and, by definition, will produce the greatest addition to real national income that could be obtained from given resources at any one time. The third criterion is used more as a note of caution limiting the scope of the development program than as a guiding principle for determining the desirable contents of that program. However, the marginal principle (first criterion) is not necessarily compatible with the growth (second) criterion. For example, if instead of being invested in conformity with the principle of short-run marginalism, more capital were invested in developing an economic structure which would yield a higher rate of growth than existed formerly, although the level of real national income would be lower in the short run, it would be higher in the long run.

As indicated, criteria one and three, based upon marginalism and prudence, are quite adequately satisfied in the plan; but how much emphasis has the Mission placed upon its second criterion? The growth criterion may best be satisfied if a "concatenation of industries' is developed. Such a "concatenated" structure has these attributes: first, an increase in the output of any one consumers' good or export, x, may increase the demand for and the output of other domestically produced goods which, in turn, react back and stimulate the demand for and the supply of x. The process then repeats itself. If the supplies of the various consumers' goods act as incentive goods to the other producers, or if the demand for the consumers' goods is complementary, such a concatenation may easily occur. Moreover, it should be possible for any major industry to serve as the initial stimulus for the expansion of the rest, in contrast with an export economy where the fates of the other forms of economic activity are completely dependent upon the vagaries of the export crops.

Secondly, the "concatenated" industries utilize a large volume of inputs which can be produced, or are available, at home. Whenever the output of consumers' goods is stimulated, in the manner just described, further production or fuller utilization of inputs is induced. Additional incomes are thereby generated and the relatively unskilled and underutilized labor force may obtain further training. This, in turn, enables real incomes to grow further since increased output of goods and exports may be stimulated either by higher incomes or by greater productivity of the inputs. Thus, the growth process is started over again. Such an economic structure does not necessarily involve any contempt for the principles underlying the gains from trade. Needless to say, this is not a short-run process, especially in backward areas; but is the process of growth ever a short-run affair?

Given this analysis, how far has the Britnell Mission's plan been influenced by its growth criterion? The Mission gives top priority to the development of coffee, corn and cotton production, but is noncommittal concerning the priorities of industrial growth. Thereby, the plan's ability to satisfy the

Mission's growth criterion is somewhat lessened. Food, exports, cotton and textiles are mildly "concatenated" to provide the foundations for economic growth in the sense discussed above. However, the Mission does not specify that the development of the textile, shoe and leather industries should receive priority over the development of the beverages industry. The choice as to which industrial products are to be developed is an important one. An economic structure based upon the coffee, food, cotton, textiles, shoe and leather and livestock industries may very well satisfy the growth criterion. On the other hand, an economic structure based on coffee, food and beverages may be unable to satisfy this criterion. The fortunes of coffee will affect those of the latter two; but it is difficult to see either how an increased demand for food or beverages might be induced any other way, or how an increased demand for one of the latter two could stimulate substantial growth in the others. What domestic inputs would be stimulated, and would such a structure provide training for labor?

The heavy orientation of this medium-run program towards criteria one and three may not be unjustified since it may be necessary to increase the relative emphasis upon projects which mainly satisfy these criteria, if the most desirable projects according to the growth criterion are unable to cope adequately with the foreign exchange and inflationary dangers. A long-range development program, however, should definitely place major emphasis upon the growth criterion, since the main value of a development program is its ability to create an economic structure which will generate its own rate of growth at a higher level than existed formerly.

This interesting report will probably be read by many people who will be called upon to implement development programs in Guatemala and in other countries. Such people, particularly, would profit more from the Mission's report if it had developed more fully the factors which influenced its decision to place major emphasis upon criteria one and three instead of upon the growth criterion.

The authors of the second volume under review have undertaken a type of study which is essential to a rational formulation of any program for economic development. Their study examines the impact of the Guatemalan fiscal operations upon the economy, the effect of these operations on the rate of economic development, and the extent to which the fiscal system can contribute to economic development. Since an important way in which fiscal policy may influence the rate of economic growth is through its effects upon the profitability—both before and after taxes—of different industries, the authors devote some attention to the impact of the fiscal system on business. Here, they analyze the effects of taxes upon resource allocation by determining the different tax burdens borne by various industries and the effect of the tax structure upon the form of business organization, the size of business firms and the structure of production.

An extremely suggestive and interesting observation is made concerning an indirect relation between the tax system and the structure of production. Since the market structure is very conducive to tax shifting—about eighty per cent

of the total business taxes are shifted to consumers—it is concluded that taxes weigh most heavily upon products having high income elasticities of demand. From this, one may infer that inferior goods consumed by the nonbusiness sector, which bears the incidence of these taxes, and luxury goods, consumed by businessmen (in the broad sense of the term) who shift these taxes, would gain from taxes which could be shifted, while taxed products which have very low price elasticities of demand would not suffer very much. Unfortunately, the available information precludes any more definite statement as to which products would be affected by these indirect effects However, if the products which are hurt by these taxes are those whose development the government is trying to stimulate, then the use of such taxes may be inimical to the government's economic development program. On the other hand, in Guatemala taxes which can be easily shifted curtail consumption and thus may be effective anti-inflationary devices. Therefore, it is to be hoped that the authors may in a future study evaluate the desirability for economic development of a tax structure which is based heavily upon taxes which can be easily shifted.

Fiscal policy can also influence the rate of economic growth by combating inflation, which often is induced by a development program, and by mitigating the impact of cyclical fluctuations. The authors, therefore, raise three basic questions to be answered in the latter part of the book which is mainly concerned with aggregates. First, is the revenue system "adequately flexible for a process of gradual expansion of general economic activity *without* inflationary price increases?" Second, is the present fiscal system capable of stemming "an inflationary tide" which may result from development? Third, what is the "proper degree of revenue flexibility" if the impact of cyclical fluctuations is to be mitigated?

Since a large part of the revenue depends upon the volume of imports which, the authors believe, increases more than proportionately with real income, it is stated that the fiscal system is sufficiently flexible to finance the gradual growth of output, if inflation is avoided. It is, therefore, maintained that a strong case can be made for continuing to rely heavily upon the yield from import taxes as a major source of government revenue. It is to be feared, however, that this policy recommendation may be misunderstood by the fiscal authorities. The case for a continued heavy reliance upon import taxes must presuppose that exports will grow proportionately with imports. Such a presupposition is not without justification because a large growth of exports is planned by the Britnell Mission in the near future. But, how long is this growth of exports likely to continue? If imports tend to rise more than proportionately with real income and if exports do not, will not the resulting balance of payments difficulties force the volume of imports to conform to the available foreign exchange reserves? Import tax revenues will not be able to continue to grow at the present rate since the growth of imports will be restrained by government decree. Furthermore, it is probable that a long-range development program will reduce the relative growth of exports to real income.

Therefore, since the long-run growth of exports cannot be assumed to equal the growth of imports—before government intervention—the fiscal authorities should be cautioned that they may be forced to modify the tax structure,

gradually, to rely less heavily upon import duties for a major part of government revenues.

The authors' analysis of the "proper degree of revenue flexibility" to mitigate the impact of cyclical fluctuations, and of the revisions in the tax structure which are designed to correct an inflationary problem, are further examples of how their policy recommendations and analyses give thoughtful consideration to the unique structure of underdeveloped countries and avoid the facile application of the usual economic rules of thumb which have emerged from the experiences of industrial countries.

JEROME L. STEIN

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Evolución Histórica de la Industria Siderurgica Chilena e Ibero-Americana. By CARLOS SANCHEZ HURTADO. (Santiago, Chile: Editorial Nascimento. 1952. Pp. 398.)

There are few Latin Americans today who do not want to industrialize their countries. Those who oppose the establishment of heavy industry—specifically an iron and steel industry—are almost as uncommon. There are now iron and steel industries, or more or less well-advanced plans for bringing them into existence, in Brazil, Chile, Mexico, Argentina, Colombia, Peru, and Venezuela. Even the smaller nations are thinking in terms of establishing metal fabricating industries. The iron and steel industry has come to represent economic maturity in the southern republics of the hemisphere.

The present volume deals with this problem in two parts. The first is a study of the development of the iron and steel industry in eight countries in South and Middle America other than Chile; the second and larger half concerns the development of that industry in the shoestring republic. The author, a Chilean, is particularly interested in the development in his own nation, and is concerned with the industry in the other countries principally in so far as it throws light on the situation in his own.

Sanchez Hurtado is an enthusiastic supporter of the new Huachipato steel plant which first entered into production in Chile in 1950. He examines with considerable care the problems which have faced this enterprise, and how they are being overcome. For instance, he looks at the prospective markets for the plant's products, concluding that a large enough market is likely to exist in Chile for a plant of the present capacity of Huachipato, and hints that in time there may even be sufficient markets in Chile and the neighboring countries for a plant capable of producing at the most efficient capacity, according to United States standards, which would mean a plant about three times the present size of Huachipato. His analysis of this possible expansion of plant rests fairly heavily on the likelihood of an export market for a considerable amount of output in Argentina, which will probably never have an iron and steel industry capable of meeting its own needs. It rests less heavily on the possibilities of exporting to the neighboring countries of the Pacific coast of South America.

The author examines the raw material situation of the industry, analyzing

Chile's resources of iron, coal, electricity and other required products. Although there is plenty of iron, and of most of the others, the possible Achilles heel is coal.

Problems of location, and difficulties in obtaining a labor force and technical skill, are also discussed. Finally, Sanchez Hurtado describes in some detail the financial arrangements which were made with the Export-Import Bank. He stoutly defends the terms of the agreement with the Eximbank, terms which because of their requirement that American engineers and technicians administer the plant in its five years, have come in for a great deal of attack in Chile.

This study is a product of the Seminar in Economics of the University of Chile. This seminar, directed by some of the country's leading economists, has been responsible for some of the best studies of Latin American economic life which have been made. The present work takes its place as one of the most distinguished of these research projects. It is scholarly in its research and scope. It has an exceedingly useful bibliography appended.

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The Economic Development of Iraq. Report of a Mission organized by the International Bank for Reconstruction and Development at the request of the Government of Iraq. (Baltimore: Johns Hopkins Press. 1952. Pp. xi, 463. $5.00.)

This report might have been sub-titled: The Art of Spending Large Funds Wisely, or, Inflation in Moderation. The International Bank's mission to Iraq, headed by Ivar Rooth, with John C. de Wilde as chief economist, had the unique and enviable task of making recommendations for an economic development program in a situation in which the problem is not a cramping shortage of funds but, rather, the effective use of a virtual flood of revenues for development.

In accordance with an agreement reached in 1951, the three internationally owned oil companies operating in Iraq have undertaken to raise oil output, which amounted to 6 million tons in 1950, to some 30 million tons per year by the end of 1955 and to turn over to the Iraqi government half of the profits before the deduction of taxes. On this basis it is anticipated that over a five-year period the government may receive net revenues amounting to as much as 214 million dinars from oil alone. (One Iraqi dinar equals £ 1 or $2.80.) Under the terms of a law passed in 1950 all such oil revenues are to be used for developmental purposes.

To carry out the proposed five-year program, the government will have "to gear itself" to an annual rate of development expenditures which at the end of the period will need to be about ten times the total public capital outlays (ID 5,200,000) in 1950-51. The mission's report stresses the dangers involved and certain of the basic requirements. "The experience of other countries in process of development illustrates that it is not easy to spend money rapidly

and efficiently on well-conceived projects. . . . Such a rate of expenditure will be achieved only with great effort and by careful planning."

The mission's major prescription for preventing a severe and disruptive wage and price inflation is for the government to allow liberal use of its sterling income from oil to pay for imports. Measures to curb credit expansion are also proposed. Lacking reliable information at almost every point, the mission must skirt many of the critical issues: Granted the wasteful use of manpower on the land, can a sufficient labor force be recruited rapidly, and can it be done without a serious drop in agricultural production? Certain types of skilled labor are already in short supply; will the development projects tend to siphon off this supply and disrupt the existing industries and services? In the face of the obvious difficulties posed by the unprecedented situation and the lack of information, the mission provides a thoughtfully conceived set of general guide-lines, including a recommendation that a committee of economic experts be formed to keep watch on the nature of the changes that the economy is undergoing to provide a basis for more detailed planning.

The report provides a brief, but careful, analysis of the underlying economic problems of the country and a detailed description of the major problems and potentialities within the agricultural and industrial sectors. Iraq has a relatively rich natural resource base. In addition to its fabulous oil resources, it has a vast land frontier. Official estimates suggest that the amount of "cultivable" land is almost three times that under cultivation. Projects for the storage of the flood waters of the Tigris and the Euphrates can open up large new areas for settlement, while the drainage of lands which have deteriorated owing to salting could do much to raise the present low productivity of agriculture.

Industry is as yet little developed, but here too the mission finds conditions favorable to fairly rapid expansion. In oil and natural gas the country possesses a cheap source of power and fuel as well as an important source of raw materials. An expanding agriculture will provide a variety of materials for processing. The mission makes specific suggestions as to what industries might be expanded and what new industries might be established, based on an analysis of the prospect for efficient production on a competitive basis.

The existing transport system is found to serve the present needs of the country adequately and, with the implementation of programs for improvement of the road network and the railway system, transport capacity should have no difficulty in meeting the growing requirements of agriculture and industry.

The great hurdles to rapid economic progress are seen to be not in the realm of natural resources and financing, but in the "underdeveloped" state of the human resources and in the generally backward-looking and often exploitive institutional arrangements which dominate the Iraqi scene. The Iraqi *fellah* lives in the direst poverty and suffers from debilitating diseases; he is illiterate, ignorant and tradition-bound. Also, he is exploited (he sometimes has to turn over as much as six-sevenths of his crop to the landlord) and he is overtaxed.

Throughout the report, the mission stresses the importance of improvements in the quality of the human resource. Several chapters are devoted to measures for raising the levels of health and education and expanding the basic community services. The most advanced thinking in these fields is drawn upon and the whole subject is treated with thoroughness and insight. An unusual feature of the report is a section on community planning and the rôle it can play in improving the living conditions of the population and the efficiency of the public services.

Far less satisfactory is the treatment afforded the hurdle to progress posed by existing institutions. The report refers to a few of the difficulties—for example, the tendency for new and improved land to fall almost entirely into the hands of the big landowners, and the excessive, monopoly-creating protection of existing industries—but the few minor changes proposed would seem to fall far short of providing for a "climate" in which the ambitious targets set could possibly be achieved. Here, of course, is involved the difficult question of how far a "foreign" mission can and should go in discussing underlying social, political and economic institutions. Under any circumstances, one might question the advisability of setting targets and proposing programs involving unprecedented rates of progress, especially for a country which for many centuries has remained virtually static, without at the same time specifying fully the conditions for such progress. Expert missions have the opportunity—and, it may be argued, the responsibility—of treating problems within their usually narrow terms of reference in a context which relates economic development to broad social issues and provides a challenge to aim at progress on a truly broad front. Within its own terms of reference, the mission to Iraq has provided a competent and valuable report.

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Challenge and Response in the Middle East. By HEDLEY V. COOKE. (New York: Harper & Brothers. 1952. Pp. xiii, 366. $4.00.)

Recent events in the strategic Middle East should not baffle those who have read Hedley V. Cooke's basic and timely study. The book explains in some detail the circumstances which underlie the unrest and revolution in Egypt, the thorny problems which stand in the way of a rational settlement of the Iranian oil question, the rapid strides which Israel and Turkey have made since the end of World War II.

Challenge and Response in the Middle East is an account of the economic, political, and social conditions of the area, showing how these conditions arose, are perpetuated, and what can be done to improve them. The book opens with an introduction and follows with chapters on each country of the region—Iran, Iraq, Syria, Jordan, Israel, Egypt, Turkey, Lebanon, Saudi Arabia, and Yemen. A chapter on regional planning and one on the future conclude the study. The country chapters provide, for each political entity of the area, factual and analytical material on the general background; the nature,

application, and the results of the various plans which have been made for economic and social improvement; and recommendations for future action.

This study should appeal to a wide audience, and find a place on the reserve reading shelves of college courses in economics and geography. Both well-written and scholarly, it could be read with profit by those interested in this strategic region and America's rôle in international economic development. In particular, economic planners, the institutionalists, regional and agricultural economists, geographers, as well as development engineers, will be amply rewarded by a study of this document.

In part, this work is the story of what exaggerated emphasis upon nationalism, xenophobia, tradition, together with unenlightened class interest, can mean in terms of physical impoverishment. It is easy to see how the Middle East pattern of income distribution has retarded the rate of economic development, with its great inequality between very narrow upper and very wide lower limits, and with its heavy emphasis upon incomes from property as against those from personal effort.

Hedley Cooke offers no pat solution for the problems of the area. Although he apparently favors the regional approach, he is cognizant of its pitfalls. He seems to have considerable confidence in the capacity of Point IV to aid in the development of the area—but one wonders, in view of the magnitude of the task, if sufficient funds are available to do more than scratch the surface of the problem.

Two possible avenues to the development of the area—private investment and trade promotion techniques—are not explored in any detail, although the investment experience of the oil companies in the Middle East and the results achieved by the American and European trade promotion programs afford good case material on both methods.

The study sketches, somewhat too briefly perhaps, the work done by the Middle East Supply Center, an Anglo-American organization created during World War II to assure a minimum flow of essential goods to the region and to maintain its political stability. This organization, which had the confidence of virtually all groups of the area, was liquidated at the end of hostilities together with Lend-Lease. In view of the substantial achievements of the Middle East Supply Center during World War II, its continuation, together with Lend-Lease, into the post-war period might have proved of considerable aid in the development of the Middle East.

Economic planners will find little solace, but much food for thought, in the author's analysis. The Middle East has not suffered from any dearth of planning. The plans, by and large, have not been carried out and this work spells out in some detail, the reasons for these failures. Institutionalists, on the other hand, will find much evidence in the pages of this book, of the power of the institutions—especially those of land tenure—to influence the level and the pattern of economic life.

Hedley Cooke assembles and analyzes the results of recent scholarly investigations and adds material and insight gleaned from several years residence in the region as a Foreign Service officer. The result is a top-notch contri-

bution to our understanding of the problems of the Middle East, readably presented with objectivity and competence.

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Howard University

The Soviet Financial System: Its Development and Relations with the Western World. By MIKHAIL V. CONDOIDE. (Columbus: Bureau of Business Research, College of Commerce and Administration, The Ohio State University. 1951. Pp. xiii, 230. $4.00.)

This book is notable for the fact that it represents the first attempt by a Western student in almost fifteen years to undertake anything like a systematic survey of the Soviet financial system. It seems curious that this aspect of Soviet economic activity should have received so little attention in the West, particularly since this is one field in which the Soviet government's restrictive information policy has been applied with relative leniency. A considerable volume of descriptive as well as statistical material on Soviet finance continues to appear from Moscow. While this material is notoriously fragmentary and often difficult to interpret, it does present the meticulous student with a promising opportunity to examine and appraise the functions of Soviet finance and its rôle in Soviet economic development.

Professor Condoide's study, unfortunately, does not take full advantage of this opportunity. Its positive contribution is a description of the legal-institutional framework of Soviet finance. On this level, it examines the organizational structure and operational details of the banking and credit system, defines the legal status of money and gold, describes the revenue and expenditure composition of the government budget and outlines the methods of financing foreign trade. The material is illustrated with a fair collection of summary statistics and supplemented by a detailed bibliography and some interesting documentary appendix material. However, the usefulness of this descriptive material is impaired by some notable omissions (*e.g.*, no mention of the State Insurance System, no data showing outlays on "internal security"), by factual inaccuracies (*e.g.*, faulty statements on savings bank interest rates and services, p. 45; wartime changes in tax rates, p. 96), by errors of interpretation (*e.g.*, confusion between national budget and financial plan, pp. 77 and 160), and by some irrelevancies (*e.g.*, 40 pages of text and appendix devoted to Soviet foreign policies and violations of treaty obligations).

In its analytic aspects the study is disappointing. In his attempts to analyze the functional aspects of Soviet finance and to assign finance its proper rôle in Soviet economic organization, Condoide is hampered by a superficial understanding of Soviet economic processes. His statements that "the allocation of labor is authoritative" (p. 13), that "all economic activity is financed by the state" (p. 20) and that "the state is the sole producer and distributor of commodities" (p. 20) depict the central authority as a ubiquitous and omnipotent decision-making entity and completely ignore the important rôle that decentralized decisions and nongovernmental organizations play in Soviet

economic activity. His comments on the functions of money, credit and prices are often vague and sometimes contradictory. Thus he claims, on the one hand, that "the government's investment plan is carried out automatically, as a result of the allocation of physical resources, no matter how it is financed" (p. 14), and concludes, on the other hand, that "Soviet banking, credit and monetary policies provided practically unlimited funds to promote industrialization; hence what provided employment was this spending and not planning as sometimes assumed" (p. 47).

In his analysis of financial policy the author shows a tendency simply to reproduce, without further comment, the ambiguous and cryptic official Soviet stereotypes which purport to explain the objectives and rationale of their financial operations. His efforts to probe behind these stereotypes show little insight. Thus, while he takes issue with the Soviet claim that gold reserves are related to the tempo of socialist development, he assumes that the pegging of the ruble to gold will make gold reserves "to a much greater extent than heretofore, the foundation and security of the Soviet currency system" (p. 58). Condoide dwells at length on past Soviet failure to hold in check the inflationary forces generated by Soviet industrialization, but neglects to point out that, at least since 1948, the hard lessons of monetary instability seem to have been learned. In this connection, a discussion of the use of the budget surplus as a fiscal counterpart to bank credit creation, and other deflationary techniques applied by the Russians with conspicuous success in recent years, would have been welcomed.

To the general reader, this book may prove helpful as an introduction to the financial institutions of the USSR; because of its analytic deficiencies, however, it cannot be recommended to the specialist.

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Labor in the Soviet Union. By SOLOMON M. SCHWARZ. (New York: Frederick A. Praeger. 1952. Pp. xviii, 364. $6.00.)

Dr. Schwarz notes at the outset of his book that he is considering only certain topics within the larger field of subject matter which the title connotes. His concern is with the theory and practice of Soviet labor policy in four areas: the labor market, wages and the standard of living, hours and conditions of work, and social insurance. Furthermore, he deals only with that portion of the total labor force which works for hire, the "workers and employees." They comprise the overwhelming bulk of the industrial (and urban) labor force, but they are less than half of the total.

If there is a theme in his book, it is that Soviet labor in the four areas is far from as well off as it could be were official policy otherwise and as the Soviet press would have the people at home and abroad believe it is. This means something different in each of the areas, and the book can therefore best be reviewed one area at a time.

Compulsory control is the aspect of Soviet policy in the labor market which receives most of the author's attention. The discussion centers on the labor laws of 1938 and 1940. In certain of their provisions, designed to strengthen plant discipline and curb labor turnover through "moderate" compulsion involving pressures and penalties, these laws are an extension of past laws. Schwarz describes the development of this type of legislation in great detail, giving special attention to its origin in the transition from the New Economic Policy to the First Five-Year Plan. In their more drastic provisions, however, the laws of 1938-40 represent "a fundamental change in the labor relationship" (p. 100): the introduction of workbooks, the establishment of a labor draft, provision for the compulsory transfer of certain skilled personnel, and the ordering of criminal punishment for quitting a job without permission of the employer. Even here, the author finds some precedence in earlier legislation.

These laws gave to individual ministries and enterprises compulsory control over the labor in their jurisdiction. Whether the absence of a central administration of labor control (except for the training program) made this compulsion any the less pervasive from the standpoint of the worker, the author does not clarify: ". . . practically all elements of . . . compulsory labor were at hand . . . lacking [only] an administrative setup to make it operate as a coordinated compulsory organization of work processes" (p. 119).

On the question of postwar developments in the labor market, Schwarz is very brief. After noting that extraordinary measures adopted during the war were apparently dropped after 1947, he says only this: "The enforcement of the decree of . . . 1940 seemed . . . uncertain in 1945 and 1946. This . . . was . . . a passing phase. The government . . . strove . . . to overcome the weakening of their rigid system . . . [and] in the field of labor policy . . . seemed ready for a consistent pursuit of the course . . . strikingly expressed in the 'reform' of June, 1940" (pp. 128-29).

The chapters on wages and the standard of living cover the movement of money wages and consumer goods prices, in order to show what has happened to real wages since 1928. The presentation is detailed, but the author does not attempt, as others have, to construct an index from the incomplete price data. Consequently, his conclusions on the movement of real wages are in general terms: Real wages dropped about 50 per cent from 1928 to 1932, rose about 20 per cent from 1935 to mid-1938, and then fell continuously until 1946. A rise after 1946 is still going on; but he is sure that real wages in 1928, 1938 and probably even 1940 are "far from attained" at present. He summarizes the views of other analysts on this question and takes issue on certain points. Within an area of general agreement on developments since 1928, his is the relatively pessimistic view of recent wage trends.

The author estimates that "socialized wages" (*e.g.*, public health) show a trend which more or less parallels the movement of real wages; therefore, "it can hardly be concluded that they . . . make up for the latter's decline" (p. 249).

Three-quarters of the book is devoted to the sections above on the labor market and wages and living standards. The treatment of the third subject,

hours and working conditions, includes the time-organization of production, from the seven-hour three-shift day with continuous work week used early in the plans to the present eight-hour day and 48-hour week; the practice of "socialist competition" (up to 1937); the widespread use of overtime and the violation of restrictions on the use of female labor (called a "decline in labor protection"); and the deterioration in work safety. On postwar developments the author gives only a summary impression, namely, that hours and the work-day are the same as in 1940, although overtime is probably not as prevalent, and that with respect to the decline in labor protection and safety, "a certain leveling off . . . seems to be in the making" (p. 303).

The final section of the book, on social insurance, is a short but comprehensive survey of legislation in the field. The theme is that social insurance, more than providing security for the worker, is a weapon in the drive to raise productivity and strengthen labor discipline.

This book evaluates Soviet labor policy in terms of its effect on the Soviet worker, and it finds that the cost of the policy in freedom and material well-being has been very high. As a result, many of the goals of the revolution and the five-year plans are seen betrayed. Other books on Soviet labor have reached the same conclusions,[1] but Schwarzs' treatment of the theme is noteworthy because he develops it more systematically, in greater detail, and with more documentation—and because he is able to include wartime developments. (His treatment of the postwar period is a limited one, as noted.) Furthermore, the book has unique value in the person of the author, a lifetime student of Russian and Soviet labor, whose commentary on specific points and issues will be of lasting benefit to specialist and nonspecialist alike.

In the end, on the grounds of both universal ethics and the lofty aims of the Bolshevik revolution, Soviet labor policy must be judged as Schwarz has judged it, in terms of "its impact on the every-day lives of workers and employees" (p. vi), all other conditions aside. In the meantime, however, it must also be evaluated (if not judged) in terms of the chiefly impersonal ends which it was designed (also) to achieve—the increase of production and labor productivity, the lowering of costs of production, the effective distribution of the labor force, etc., in other words, the solution of the basic economic problems.

Schwarz does not address himself to answering these questions, but he does touch on them frequently, a fact which may lead the casual reader to associate his secondary observations with the extensive foundation built to support his main theme. This may not always be justified. For example, while examining the beginnings of compulsory control, he makes this observation concerning the labor market of the 'thirties, following the abolition of unemployment insurance (1930): "the market automatism of labor supply and demand vanished" (p. 51). To accept such an unqualified statement, the reader

[1] The two most recent are M. Gordon, *Workers Before and After Lenin* (New York: Dutton, 1941) and L. E. Hubbard, *Soviet Labour and Industry* (London: Macmillan, 1942). The first puts the conclusions in even stronger terms than Schwarz does. The second, while reaching essentially the same conclusions, places them in perspective alongside other aspects of the total picture.

must be given as thorough a presentation of all the aspects of the labor market as he is of only one of them. Compulsory control over labor distribution and discipline may have been the dominant (if not exclusive) factor in the "market" after 1940, but it does not seem to have been such in the middle 'thirties (according even to evidence elsewhere in this book). On the contrary, enough of the characteristics of "demand and supply," as economists understand the term, were still evident prior to 1938-40, that the term may be used as an apt generalization of much of the market's activity.

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Economic Systems; Planning and Reform; Cooperation

The Cost of Industrial Movement By W. F. LUTTRELL, assisted D. A. COCHLIN, F. G. DAVIDSON, and J. F. THOMPSON. Occasional paper No. XIV of the National Institute of Economic and Social Research. (New York: Cambridge University Press. 1952. Pp. ix, 104. $3.75.)

In the British Coalition Government's famous White Paper on Employment Policy for a "High and Stable" Employment, and in the policy of all subsequent governments, regardless of party, the problem of industrial location has loomed large. This was natural since in certain "depressed" areas, of which the biggest were South Wales and the North East Coast, unemployment in 1933-37 was at least double the average for the whole country, and there was, besides, a large reserve of unoccupied women of working age. In the Distribution of Industry Act, 1945, also fathered by the Coalition Government, development areas were formed out of these depressed areas and manufacturers virtually forced to build any new factories there, if anywhere. This is perhaps the nearest approach Britain has made to positive planning, and it was rendered possible by the postwar shortage of building materials. If manufacturers in "congested" areas proposed to build extensions to their main factory rather than branches in the development areas, they might not get the necessary allocation of timber and steel.

Free-enterprise enthusiasts will naturally want to know the extent of the resulting damage to the economy; and in a most laudable attempt to assess the economic costs, if any, of their own policy of insisting on branch factories rather than extensions, the Board of Trade, the responsible government department, financed Birmingham University, University College, London, and the National Institute of Economic and Social Research, to enquire into the relative costs of the different locations. This volume is a preliminary "interim" contribution, but the general plan of enquiry is explained in Sir Henry Clay's preface.

Mr. Luttrell has devoted himself to comparing new branch factories, mainly in the shoe industry, started in places unused to the industry, though not

necessarily in a development area. He finds that in the first years of their establishment new branch factories have, on average, much higher total costs, but that they gradually manage to reduce costs so that by the third year the four branches studied that long had 30%, 19%, 13% and 4% higher total costs than their main factory. These different percentages were associated with differences in the training of new workers and in the provision of a nucleus of skilled workers. Distance of branches from main factories was also important because of accessibility to skilled workers in the old district and to management services of the main factory.

An unexpected discovery of these studies is the lack of knowledge of firms about the precise burden of their costs. Once the goodwill of firms had been obtained, with full access to their accounts, definite and fairly exact conclusions might have been thought possible. In fact, firms themselves seem in the dark or, if they appear to themselves in the light, it is often a false light. Mr. Luttrell comments, for instance, on the undue disregard of overhead in comparison to direct labour cost, though overhead costs may be two or three times as great. Whether firms know their own costs or not, however, is in the present British situation not so important as might be supposed. With full employment, unfilled vacancies and lag in filling housing needs it is often not a matter of getting labour cheaper or operating cheaper generally in one place than another, but of getting labour at all. Many a Birmingham firm that cursed the government for insisting that it build a branch in a development area rather than extending its main factory must now be thanking its stars (but not of course the government) for this bit of State planning. For with the present prosperity and over-employment in Birmingham, labour is not to be had, though still available in areas some distance away.

Mr. Luttrell is to be congratulated on presenting his case studies clearly and yet in detail. After a brief introduction (Chap. 1), he is careful to explain the scope and methods of his enquiry (Chap. 2 and 3) before describing (Chap. 4-5) his four detailed cases, three in the shoe and one in the engineering industry. But he is not just descriptive. In his final chapter he puts forward some tentative conclusions as to the importance of training labour and the difference between a branch thirty miles and a branch sixty miles from the main works—conclusions which cannot be said to be novel or to arise very clearly from the cost comparisons. But in this pilot enquiry it is good that the author is careful to contrast the straight comparison between branch and main works with the more relevant comparison between branch and an equivalent *extension* of operations at the main works. If main works is not fully utilized, extension is, by spreading overheads, likely to be cheaper. But this assumes that labour can be secured at the main works location. Under present British conditions of full employment this assumption is not realistic and Mr. Luttrell is right in soft-pedalling the comparison of branch with extensions to main plant, though it is the more logical comparison. We look forward eagerly to further publications of this government-sponsored research.

P. SARGANT FLORENCE

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Marx Against the Peasant: A Study in Social Dogmatism. By DAVID MITRANY. (Chapel Hill: University of North Carolina Press. 1951. Pp. xiii, 301. $4.50.)

Populism in Eastern Europe has its roots in the deep discontent of the peasant class. The land hungry (often landless) subsistence farmer was primarily interested in the redistribution of land. Populist writers borrowed from the physiocrats all the arguments in favor of an "independent" peasantry, protected by a benevolent government against feudal and urban exploitation. Mitrany's book is a good example of Populist writing. As a disciple of Proudhon, he felt impelled to attack what he thinks are twin enemies of the independent peasant: the liberal and the Marxist economist. Both "regarded the agrarian problem from the angle of production rather than from that of social organization," both looked upon "large-scale production . . . as the first condition for general well-being." Capitalist farming and collectivization lead to the same end—the destruction of the small family holding, which, after all, should not be looked upon "merely as a means of living but as a way of life."

Large-scale farming (according to Mitrany), as exemplified by the English inclosures and the latifundia in Italy and Eastern Europe, did not raise the productivity of the soil nor emerge as "a better system through free competition" (p. 11). This is true, of course, of latifundia, a feudal anarchronism, which kept the peasants in bondage (hence overcrowding, malnutrition, and low productivity). The inclosure movement, on the other hand, complemented the industrialization of England by providing a surplus of agricultural produce to feed rapidly expanding towns, which at the same time provided new avenues of employment for those not wanted on the land. If, however, the surplus farmer had been permitted to stay on the land, the result would have been as disastrous as in prewar Poland, for example, where minute subdivision of the land reduced peasant holdings to agricultural slums.

There is a lot of nonsense in Mitrany's book about "peasant mystique," about "the pernicious effects which followed from superimposing Western capitalism upon a simple peasant society," and about rural overpopulation—the worst type of concealed unemployment—which, perverting the concept of full employment, he assumes to be a contributory factor to full employment! "A country eminently agricultural . . . is a country eminently poor and socially and economically backward." This basic fact, expressed by a Populist writer whom he quotes (p. 28), leaves Mitrany unconvinced. But farming in industrialized Western Europe—depending, of course, upon availability of arable land—succeeded in balancing cash crop and diversified production, which neither the latifundia type of large-scale farming nor the small subsistence farmer in Eastern Europe was able to achieve. Still more important is the fact, that the peasant class in Western Europe retained its social organization, and became solidified as the core of a traditionally conservative society which, unlike the semifeudal East, was not averse to rapid industrialization and absorption of the landless in urban centers. This is what Stolypin (Russian Prime Minister, 1906-1911) proposed to do in his great land reform in Russia. He had in mind the creation of a loyal well-to-do peasantry as a

balance against the city proletariat, an ill-fated attempt to stave off revolution!

Peasant-dominated governments inspired by Populist ideals had their chance in power after the First World War, and muffed it. Hasty land reforms gave "millions of poor sharecroppers and landless laborers . . . a new status as formally [!] independent peasants even if economically many were not better off than dwarf owners" (p. 94). The division of land resulted in a "reduced supply of food to towns" (p. 95). Mitrany chides Western economists who "simply looked upon the fall in the production and export of cereals as proof of a decline in productivity" (p. 100). Why, farming had changed now from farming for the market to farming for subsistence! The peasants, "in an economically stronger position, satisfied first their own needs before they started producing for the market" (p. 101). In fact, a change from backward latifundia into backward small holdings brought about a deterioration in the balance of payment position and a further decline in the standard of living in these countries.

Thus redistribution of land—creating innumerable dwarf holdings—actually retarded the economic development of these countries. Poverty and unrest, as before the war, became a permanent feature, especially after the disastrous price drop of farm products in the early 1930's. Military *coups d'état* and court intrigues finally succeeded in eliminating reform governments under peasant leadership. Yet Mitrany leaves the impression that a "victorious" Populism had emerged as a sort of peasant Third Force (see Ch. 10, "Not Capitalism, Not Socialism"). On the contrary, its ideology has now been discarded as no longer useful. Peasant leaders, now in exile, have accepted the Western type of agricultural organization (*i.e.*, capitalist production with its legal guarantees of property holding, profit making, noninterference, etc.) as their ultimate goal. This they pledged in the so-called "Williamsburgh Declaration of 1952," a platform for restoration of Western-oriented regimes. On the other hand, former Populists who remained and joined the various front governments seem to have consented (or been forced to consent) to the destruction of small-scale farming and to rapid collectivization on a Russian model as a *fait accompli.*

FREDERICK SETHUR

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Money and Banking; Short-Term Credit; Consumer Finance

The Growth of a Central Bank. By L. F. GIBLIN. (Melbourne: The Melbourne University Press. 1951. New York: Cambridge University Press. 1952. Pp. xi, 363. $5.00.)

Soon after extensive Australian financial legislation was passed in 1945, the Commonwealth Bank of Australia commissioned Professor Giblin to write a history of that bank covering a period as far back as the previous major

financial legislation, the Commonwealth Bank Act of 1924. The Bank could not have chosen an author with more intimate knowledge of the subject: Giblin was one of the first professional economists to have been employed by the Commonwealth government; from 1935 to 1942, he was a member of the Commonwealth Bank Board, and from 1938 to 1946, he was chairman of the Conmmonwealth Advisory Committee on Financial and Economic Policy. The resulting volume can be considered a kind of personal memorial to Professor Giblin; he died as it was in press.

This history, even though "official" and commissioned does not suffer from an excess of reticence. Giblin makes wholly clear the shortcomings of both men and laws in the struggles of the Commonwealth Bank to achieve central banking stature. He reveals the limited vision of the Bank's founders, the inadequacies of the laws under which it operated, and finally the limited objectives of those who managed the Bank during its early years.

One of the greatest mistakes was the effort to use the English model without sufficient adaption to local problems. The Commonwealth government patterned the Commonwealth Bank after the Bank of England. It tried to endow the Bank with similar powers and similar responsibilities. But the Commonwealth Bank could not discharge these responsibilities with these powers primarily because the pervasive influence of banking tradition did not operate as it did in the City of London. The Australian banks were able to challenge the financial influence of the Commonwealth Bank with impunity. Only the financial necessities of war finally forced the government to give the Bank real central banking powers. Perhaps the chief of these new powers was an enforced rule concerning the character and amount of commerical banking reserves.

Professor Giblin explains at length two banking developments not adequately reported elsewhere. During the war, Australian banks were not subject to excess profits taxation; as a result, one of the war duties of the Commonwealth Bank was to control the profits of banks. This was done by adjustment of the special accounts which will be mentioned in the next few sentences. The second feature of general interest was the introduction of secondary reserve requirements, somewhat similar to those the Federal Reserve sponsored in the early postwar years. This plan was the outgrowth of a system of war finance by which bank participation was managed by direct allocation to special accounts and not by voluntary subscription as in the United States. The obligations were similar to the treasury deposit receipts (TDR's) used by Great Britain except that the accounts were of indefinite maturity. The system worked well; as a result it was carried over into the permanent financial structure by legislation in 1945.

The reader of this book is forced to reflect ruefully that one of its major forecasts has already been proven wrong. Giblin concluded that high interest rates would never again be used as a device for restraint of credit. He adhered to this view, not for the reasons that are sometimes associated with the name of Keynes, but because he expected all central banks to be dominated by their respective treasuries and treasuries would universally want low rates.

This book is unfortunately marred by the lack of a subject index. The

chronological organization of the book requires a constant shift in attention among several subjects, such as the general economic scene, fiscal policy, monetary policy, and the state of external and internal banking reserves. This results in a choppy narrative style; a reader becomes easily confused with dates and events for which there is no ready remedy except a search of preceding sections. Nevertheless, the results are worth the work.

ROLAND I. ROBINSON

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Inflation. By PAUL EINZIG. (London: Chatto and Windus. 1952. Pp. 223. $2.50.)

Dr. Einzig has provided a stimulating contribution to the current literature on inflation. What he has to say is not as novel as he implies; nor is the rigor of the analysis likely to appear adequate at all times to the academic economist. Nevertheless, he is on the right track, in the opinion of this reviewer, and his argument is at least provocative when not compelling.

The author rejects what he calls the usual "static" definition of inflation as an excess of purchasing power over what is required by the attainable level of output at the current price level. In its stead he offers a more "dynamic" concept of inflation as "a state of disequilibrium in which an expansion of purchasing power tends to cause, or is the effect of, an increase of the price level" (p. 22); and which "is sufficiently pronounced and persistent to set into motion a spiral of rising cost-of-living, wages, cost of production, and monetary requirements and volume of money" (p. 23). What he considers to be novel in his definition of inflation is, I believe, the emphasis on price changes as the causal factor, with monetary expansion the result ("price inflation"), and on the dynamic interaction of monetary inflation and price inflation. Any upward movement in prices is likely to set off a continuous spiraling movement which the monetary authority is either unable or unwilling to check. Armed with this definition Einzig examines the relation to inflation of a wide range of circumstances and measures of policy. There is space here to mention only a few of these.

When the "undertone" (state of expectations?) is inflationary, increased taxation will not have a disinflationary effect, according to Einzig. Direct as well as indirect taxes will result in higher prices and income demands. These, in turn, will necessitate monetary expansion to sustain the higher price level. This is true even when the tax revenues are utilized to provide social services. For social service benefits tend to be considered as cost-free additions to income which are received as a matter of right. Consequently, income claims will rise in order to offset the income-reducing effect of the taxes levied. For this reason and because of a tendency toward over-full employment, the welfare state is inherently inflationary in Einzig's opinion.

The author effectively puts to rest certain naive notions about the disinflationary character of price increases. Surprisingly often in the recent debates over inflation one has come upon the argument that open inflation was preferable to suppressed, that the removal of subsidies on food prices would be

disinflationary or that the rise in the prices of imported goods was disinflationary because it mopped up purchasing power. These arguments, Einzig points out, ignore the dynamic nature of inflation wherein price rises lead to monetary expansion, to further price rises, etc.

His emphasis on price inflation leads him to reject the arguments of the "mild inflation forever" school. First, he doubts whether inflation with its dynamic character could remain mild. But, further, he suggests that price inflation may combine the disadvantages of both inflation and deflation. Price inflation is not employment-stimulating; rather, monetary expansion is required to follow it merely to keep employment from falling. Conceivably, continuous price inflation could accompany both underemployment and monetary stringency.

This no more than begins to touch upon the wide range of issues to which Einzig addresses himself with equally provocative results. There are comments on the post-Korean experience of the United Kingdom and a discussion of alternative policies for that country which, unfortunately, have been rendered less timely by the events of the more than one year which elapsed between the completion of the manuscript (as indicated by the date of the preface) and the publication date.

One shortcoming, in the opinion of this reviewer, is the failure to make explicit the assumptions which underlie the analysis. Whereas the traditional concept of inflation was adequate for a highly competitive economy where no problem of unemployment is recognized, Einzig's definition is tailored to a modern economy wherein competition is limited and the government is committed to the maintenance of full (or high-level) employment. It is only when "price makers" (to use Scitovsky's term) dominate markets that prices can be raised in advance of an expansion of purchasing power. And it is the full-employment commitment which is crucial in compelling the monetary authority to permit monetary expansion following on price rises; for the failure to do so would mean reduced output and employment, not reduced prices. This is implicit, I think, throughout the book, but its explicit statement early in the volume would have been helpful.

JOHN POWER

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La Monnaie. By ROBERT MOSSÉ. Bilans de la Connaissance Economique. (Paris: Lib. Marcel Rivière et Cie. 1950. Pp. 205.)

This book is the first of a series of "surveys of economic knowledge." The author undertakes to present a sketch of our knowledge of monetary affairs and ideas as they have developed in the last fifty years; "it is certainly not 'a digest', for it is directed towards a synthesis rather than towards an analysis . . ." Obviously to attain this goal in 130 pages (the rest of the book is taken up by Howard Ellis' Introduction, by the "Observations" of two other authors, and a bibliography) a careful selection was necessary; rather than to charge the author with omissions we should try to understand the viewpoint which guided him.

We notice first that the monetary theorist's dislike for problems of credit

institutions is not fully overcome; in discussing, *e.g.*, the controversies concerning the issue of banknotes, which filled the 19th century (p. 63), the author does not even mention the rôle of bills of exchange (or, more generally, of eligible paper) as collateral for banknotes.

Secondly, as far as monetary doctrine is concerned, the book virtually stops with 1932: theoretical problems arising in connection with Keynes' *General Theory* are not discussed at all, except for a few paragraphs about the multiplier in Chapter 3. This omission is the more serious, since this chapter, after briefly stating the quantity theory in Fisher's version, presents Aftalion's theory of monetary revenue (R) determining the price level (R = PQ). Mossé does not seem to realize that Aftalion's formula is not an explanation but an identity (p. 79: "attention is concentrated on the equilibrium between the monetary revenue designed for purchases and the total values of sales of goods and services"); nor that money does not even appear in the equation. Otherwise, he would have realized that it was precisely the achievement of the *General Theory*, by introducing functional relations, to relate income to the quantity of money, and to convert a mere identity into a set of determining equations.

Thirdly, even where the theoretical thinking of the past is summarized, brevity rather than clarity seems to have been sought. In discussing the quantity theory, Fisher's distinction between normal relations and transitional period is at least implicitly presented (p. 74), but no definition and analysis of the concept of the velocity of circulation of money can be found, except the statement that, according to the quantity theory, it is either "constant" or "always neutralized by the 'velocity' of commodities (see Marget)." (How shall the reader understand this?) In discussing the quantity theory in the Cambridge version (Chap. 3), the author overlooks the difference between the *ex ante* nature of the *k*-coefficient and the *ex post* character of the transactions velocity. In expounding the multiplier, Mossé asserts that "it is necessarily associated with period analysis," though the Keynesian multiplier is static, and Haberler's article of 1936, to which Mossé refers, deals with the Keynesian, not with the serial multiplier. In a footnote Mossé raises the question: "Is not the multiplier simply another name for income velocity?" though the former is a pure number and the latter has the dimension of time.

For these defects in the theoretical "synthesis," the reader is, to some extent, compensated by the vivid sketch of the state of monetary thinking before 1914, and, in particular, of monetary history after 1914. The American reader will be somewhat surprised by the stress laid repeatedly on the dispute between "metalism" and "nominalism," which fortunately did not infect Anglo-Saxon and Scandinavian economists. Mossé greatly overrates the influence of Knapp's *"étatistique"* theory of money; it was almost unanimously rejected by both German economists and German bankers; the paper-money inflation of 1914-23 was, as in other countries, the result of muddled thinking and indecision in an emergency, not of "nominalism." How, by the way, is the claim that metalism was generally accepted around 1900, compatible with the prevalence of a "nominalistic" quantity theory of some sort among Anglo-Saxon economists?

There are added to the main text of the book two sets of "Observations."

Those by Professor Triffin, of Yale, are mainly concerned with exchange-rate problems, which were excluded from Mossé's discussion. The Observations furnished by Professor Federici of Milan undertake to justify Mossé's neglect of Keynesian thinking, which "does not contribute anything basically new to the knowledge of the monetary process as it can be gained from a modern interpretation of Fisher's theory" (p. 133). Federici, however, read Keynes in his own peculiar way. Keynes is supposed to treat "as secondary and subordinate the function performed by money precisely if it is not spent" (p. 123); most of Keynes' readers had been under the impression that he assigns a rather exaggerated rôle to liquidity préference. "In the modern theory the monetary quantity is reduced to a secondary role if compared with the role played by the volume and proportion of expenditure" (p. 129). This is true for certain post-Keynesian applications of his theory and easily explainable from the high supply elasticity of credit money since 1933. In the *General Theory,* however, the quantity of money is treated as the only strategic parameter, whose changes govern those of the interest rate, of investment, income and employment.

Space forbids the further enumeration and discussion of details. Points mentioned must suffice to justify the reviewer's feeling that, despite some undeniable merits, this *bilan* has not attained its aim of being a synthesis of monetary theory.

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Geld und Gesellschaft. By WILHELM GERLOFF. (Frankfurt am Main: Vittorio Klostermann. 1952. Pp. 288. DM 25.00.)

This is a valiant and interesting, but only partially successful attempt to develop a social theory of money. The author has covered much of the ground previously in other books, particularly in his *Die Entstehung des Geldes und die Anfaenge des Geldwesens.*

The major part of the book consists of a sociological and anthropological analysis of the origins of money. Its economic significance is discussed only marginally, and relatively superficially since the author's conclusion is that the origins of money are to be found in the social sphere. They have little, if any, relationship to economic necessity or even convenience. Money entered the economic area only late in its development; when it did, however, its importance grew immensely.

It is the author's thesis that the three major stages of the development of money are closely related to three human sources of cultural development: instinct (*Trieb*), habit (*Gewohnheit*) and reason (*Verstand*). The basic instinct, we are told, is the desire for recognition of one's achievements, and resultant social distinctions. This instinct causes the hoarding of valuables. The origin of money lies in its function as a hoarding device. From the habit of using money for this purpose developed the practice of using it as a means of payment for noneconomic functions, such as the purchase of wives,

expiation of sin, or the settlement of reparations. Reason finally turns it int barter-money and somewhat later into a tool for more general economic ex change. "Der Weg vom ritualen Geldgebrauch zum rationalen ist der We des Funktionswandel des Geldes."

Money thus had its origin in tribal customs, frequently of a magic o mystical nature. At first they involved the making of gifts and at a late stage the exchanging of gifts. The objects that were repeatedly used for thi purpose because of their general desirability—usually luxuries, such as ring —slowly developed into money. They were desired, however, not because the gave the holder economic advantage, but personal recognition and soci distinction. Economic man is a fiction; *homo ambitiosus* is vivid reality, an primarily explains the origins of money. This part of the thesis is develope at great length.

Barter is the crucial step which gave money economic significance. Wit the expansion of economic institutions, the use of money grew from a to for barter to a general means of payment and pricing. This was not a simpl causal relationship, for money in turn assisted enormously in economic e pansion. Money finally reached its greatest height in the liberal capitalisti economies of the nineteenth century. As various forms of governmental co trols are imposed upon these economies, money loses some of its functions, an declines in importance.

The author's attempt at a detached, anthropological approach does n always succeed. For example, from the proposition that "correct" money "just" money he concludes that such money requires a monetary unit whic maintains its value. Money which declines in value leads to spendthrift co sumption, paralyzes the will to save, and thus endangers social welfare. Th conclusion—mistakenly generalized—has considerable, but not absolut validity. In America, for instance, it is quite possible future economic we fare requires a measure of such "paralysis," *i.e.*, an increased consumptio function.

A great deal of the analysis is truly fascinating, but it is buried in an ocea of verbiage. This will trouble Americans considerably more than German for the latter have been confronted with such writing in their social and ec nomic literature for many years. It is repetitious, badly organized, and e ceedingly verbose; much that is obvious is not only stated, but frequentl repeated. Many a straw man is set up only to be knocked down successfull The book deserves to be carefully edited and, together with some of t author's other writings in this field, should be made available to the Englis speaking world.

HANS A. ADLER

Washington, D.C.

Money and Economic Activity—A Selection of Readings in the Field Money and Banking. Edited by LAWRENCE S. RITTER. (Boston a New York: Houghton Mifflin Company. 1952. Pp. viii, 404. $2.95.)

An up-to-date book of readings in the field of money and banking has be

lacking in the United States since the late 1920's. In the decade of the First World War this need was met by Phillips[1] and in the following decade by Ivan Wright.[2] But during the 1930's and 1940's a hiatus existed. Thus, it remained for Professor Ritter to provide the first book of general readings as a supplement to single-text material for the 1950's.[3] This he has done in creditable fashion.

The book is divided into five parts, the first of which deals with "Money and Commercial Banking." It contains eighteen selections on the nature of money, banking, and a money economy; asset management of commercial banks; adequacy of bank capital; and the supervision of banking, including proposals for reform.

Part II, containing thirty selections, is concerned with "Central Banking." The topics covered are methods of credit regulation, factors related to member bank reserves, interest rates, war finance, and proposals for reform in monetary policy.

The next Part deals with "The Treasury and Monetary Policy," and includes twenty-two selections. The main headings are gold and the monetary system, monetary aspects of treasury operations, and central bank-treasury relations.

Part IV, "The International Economy," presents five selections on international finance, the balance of payments, gold movements, and the dollar shortage.

The final Part concludes with four selections on monetary policy and economic stability.

The book is on the whole well organized, with a thread of continuity from beginning to end, in so far as is possible in a collection from many sources. A few exceptions, however, detract from the organizational pattern. Selection 5 introduces multiple expansion of bank credit and the methods of credit control prematurely, and is repetitive with Part II, Chapter 6 on "Central Banking." Selection 6 on the par collection system would fit more logically in Part II on "Central Banking." Also, this reviewer feels the inadequacy of the space given to "Money and Commercial Banking" (Part I)—98 pages, compared with 165 pages on "Central Banking" (Part II), and 70 pages on "The Treasury and Monetary Policy" (Part III). The central problem of determination of the value of money receives no attention, and inadequate space is accorded bank loans and investments.

The individual selections are well chosen from a variety of authoritative sources and with an eye for different points of view. Large use is made of the wealth of material growing out of the Douglas Committee investigation and of publications of the Board of Governors and the Federal Reserve Banks. The editor introduces each selection with a helpful summary of the leading ideas.

[1] Chester A. Phillips, *Readings in Money and Banking* (New York, 1916) 845 pages.

[2] Ivan Wright, *Readings in Money, Credit and Banking Principles* (New York, 1926) 1,081 pages.

[3] This statement does not overlook *Readings in Monetary Theory* by a Committee of the American Economic Association (Philadelphia, 1951), 514 pages. By design this excellent collection of the best articles was directed to one segment of the field.

Teachers of money and banking should find Ritter's volume a welcome contribution to available teaching materials—especially in two-semester courses that devote considerable time to problems of central banking and monetary management.

G. W. WOODWORTH

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Business Finance; Investments and Security Markets; Insurance

Share Ownership in the United States. By LEWIS H. KIMMEL. (Washington: Brookings Institution. 1952. Pp. xi, 140.)

Share Ownership in the United States was prepared by the Brookings Institution at the invitation of the New York Stock Exchange. Lewis H. Kimmel directed the project. Its successful completion, however, was the result of the cooperative effort of thousands of individuals, business concerns, and financial groups. The study concerns the ownership of publicly owned corporations. Proprietorships and partnerships were excluded, as was ownership in family and closely held corporations. The sole test for the inclusion of a stock issue was whether there was sufficient public interest in such issue. It should be noted that publicly owned corporations are considered to be those which are owned by individuals in their own right, in contrast to government ownership.

The study is divided into two parts. In Part I the objective is to determine the nature and characteristics of *shareholdings*. Each listing in the stock transfer book is counted as one shareholding. If a person owned stock in ten different corporations, this was counted as ten shareholdings. The analysis of shareholdings is based upon usable data furnished by 2,991 corporations covering 3,954 stock issues. Of this number 1,022 were preferred stocks; 1,436 of the issues were unlisted. It is estimated that the present study covers about 25 per cent of all publicly owned stock issues.

Apparently this is the first time any study has included a classification of shareholdings by type of holder. Reference will be made, however, to only a few of them. The shareholdings of record, when classified by type of owner, refutes the popular notion that women own most of the nation's securities. The figures indicate that, while more women than men are holders of common and preferred stocks combined, men not only own a greater number of shares but the total market value of their holdings is greater than that for women.

Part I presents, apparently for the first time also, an analysis of shareholdings by states and geographic divisions. The heaviest concentration of shareholdings, both for common and preferred stocks, is in the state of New York, a fact attributable in part to the numerous holdings registered in the names of nominees, brokers, insurance companies and other types of financial institutions. Shareholdings of record are also classified according to size of business and type of business.

Considerable attention is devoted to an analysis of shareholdings registered in the names of nominees of banks and trust companies, as well as in the

names of brokers and dealers. The purpose is to show how such shareholdings are distributed among the several classes of beneficial owners. This is probably the first attempt to analyze these aspects of share ownership. The shareholdings of record for the reporting corporations are adjusted to show how they would appear if there were no shares registered in the names of nominees and brokers and dealers.

Part II analyzes the number and characteristics of share owners. It is estimated that 6,490,000 individuals in the United States are share owners in publicly owned corporations. The study reveals that owners are relatively more frequent among people 50 to 59 years of age than in any other age group; also that there is a direct relationship between share ownership and education. Also affecting share ownership, as might be anticipated, is the level of income.

With respect to occupation, share ownership is shown to be highest for administrative executives, about 45 per cent of these being share owners. Professional workers rendering personal services—doctors, lawyers, and others—rank fourth with 12 per cent. Share ownership is found to be relatively more frequent in families of one or two members, and the proportions of families and individuals owning shares is highest in the far western states—about 12 per cent for families and 6 per cent for individuals. Share ownership per family is found to be relatively highest in cities with a population of 25,000 to 100,000. It is estimated that the average number of different issues per individual share owner is 4.1. Also, more individuals own shares in manufacturing companies than in any other type of industry.

Life insurance, savings accounts, United States Series E Bonds, annuities and pensions, outrank publicly owned stocks as a form of investment. Following stock ownership as a form of investment is ownership in other government bonds, privately held stock, real estate mortgages and bonds, and corporate bonds.

The major reasons prompting individuals to acquire stocks are given as the desire for profit value appreciation (28 per cent), and a desire for income from dividends (22 per cent). Only 1 per cent of those questioned indicated they were motivated by a desire to hedge against inflation.

The study indicates that many people have a direct stake in American industry and business enterprise. Not only are there some 6,490,000 individuals who own stock in publicly owned corporations, but millions more have an interest through their ownership of bonds and other credit instruments, as well as indirectly through ownership of life insurance and savings accounts.

The book is brief (140 pages), and yet it covers the subject in a satisfactory manner. Each tabular presentation, and there are many, is well explained.

The inferences to be drawn from this study, however, will have to be those of the reader. The author sets forth the various estimates and the analysis of the data in a dispassionate manner. No moral is drawn as to whether or not a particular state of facts is "desirable" for our economy.

This study is probably the most comprehensive that has yet been made of stock ownership, either as to shareholdings or as to share owners. It provides a wealth of information as to the ownership of the corporate sector of our

economy and, while the book will be particularly valuable to those intimately concerned with this subject, it should be required reading for all who have an interest in the welfare of our economy.

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International Economics

The Economics of the International Patent System. By EDITH TILTON PENROSE. (Baltimore: The Johns Hopkins Press. 1951. Pp. xv, 233. $4.00.)

The central purposes of this book are to examine the economic significance of the right of an inventor to obtain patent protection not merely in one country but throughout most of the world and to evaluate the precautions most frequently taken by governments against abuse of this right. Though Mrs. Penrose regards the economic arguments usually used in support of the patent system as open to serious question and qualification, she provisionally accepts them in order to focus attention upon the significance of the type of patent grant that covers inventions already patented and worked in foreign countries. The principle of such grants has been generally adopted, she finds, because of pressures from large industrial countries, exporting firms, patent lawyers, and spokesmen for so-called internationalism, in spite of persistent and often well-founded doubts on the part of various small and underdeveloped countries that their interests are served thereby.

Mrs. Penrose concludes that when the geographical scope of patents is expanded by licensing foreign inventions, there is little reason to expect a significant increase in the rate of invention or industrial development and that, for the world as a whole, any such social gains as may appear are likely to be outweighed by heavy social costs taking the form of higher prices and less efficient use of resources. Nevertheless, she thinks that an international extension of patent protection is necessary to cope with problems as to the location of industry that would otherwise be created by national patent systems. If an invention could be patented in only one jurisdiction, patents would tend to concentrate in the larger industrial countries, and, in so far as there were requirements that the patents be worked, plants would be constructed, not in the best locations, but in the patent-granting jurisdictions covering the largest markets and thus offering the largest potential profits from patent monopoly. Moreover, concerns not possessing the patent would erect plants in other countries in order to escape control by the patentee. Thus tactics related to patents might overcome economic considerations bearing upon industrial location, and the export trade of patent-granting countries might be reduced by the frequency of the incentives to produce abroad rather than deal with the patent-holders.

Two ways of reducing the social costs of the international extension of patent rights are analyzed by Mrs. Penrose. The first, compulsory working of the patent within the patent-granting country, she finds to be not only in-

effective but also conducive to an uneconomic multiplication of plants, some in undesirable locations. The second method, compulsory licensing, she considers an effective and flexible way of preventing most of the more serious restrictions upon industry, especially the monopolistic activity of certain international cartels and the withholding of new techniques developed abroad that are needed by domestic industry.

In developing her central argument, Mrs. Penrose relates it to the more important provisions of the International Convention for the Protection of Industrial Property. She concludes that although the convention is one-sided it cannot be blamed for the defects of the international patent system and that the effort to use it to eliminate working requirements has been sound. However, she recommends that its restrictions upon compulsory licensing be eliminated, that use of this device be encouraged, that nonindustrial countries be exempted from the obligation to grant patents upon foreign inventions, and that the possibility be explored of using the Convention to alleviate restrictions on trade and industrial activity incident to unregulated patenting.

This reviewer finds nothing to criticize in the execution of this book, except possibly that the argument is presented too compactly. Important questions are put, and clear and persuasive answers are given. However, the general plan of the book has certain defects. The chapter on the history of patent laws is only tangentially related to the central theme, and, though well done, is too brief to be useful to the audience to which the rest of the book is addressed. The chapter on the rationale of national patent systems summarizes and criticizes arguments on behalf of patent laws, but, having been conceived as introductory and therefore brief, it does not reach conclusions as to the effect of the patent system upon industrial development within a single country. For lack of these conclusions, the discussion of the effects of an international extension of patent rights has a provisional flavor. Its logical place is in the second volume of a two-volume work, but volume one is missing. It is to be hoped that Mrs. Penrose will supply it later. But in spite of this gap in the exposition, the present volume is one of the best among the few works concerned with economic aspects of the patent system.

CORWIN D. EDWARDS

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Survey of United States International Finance, 1951. By GARDNER PATTERSON and JACK N. BEHRMAN. (Princeton: Princeton University Press. 1952. Pp. xi, 325. $2.25.)

With the appearance of its third report, it is hoped that the International Finance Section of Princeton University will no longer regard the publication of an annual summary on international economic issues of the United States as experimental, but will conclude that the survey has established itself along with the annual reports of the Economic Commission for Europe, Organization for European Economic Cooperation, Bank for International Settlements and governmental institutions. Unlike the ECE and BIS reports in that it eschews opinion, and differing from the OEEC and governmental writing which must

ignore the existence of differences of opinion even when taking a side of an issue, the *Survey* has won its place as one of the indispensable annual additions to the library of economists concerned with international economic matters.

The *Survey's* purpose is to record facts and issues. Unlike the ECE it is not interested in the imaginative use of statistics to make a point. Its statistical contribution is limited to the presentation of balance of payments data for the United States, slightly reworked to eliminate inconsistencies and for clarity.

Its discussion of issues, moreover, is not confined to "international finance" but ranges over a wider field into commercial policy, European integration, and Point Four. Finance in the narrow sense, in fact, is not a concern of the authors, for the chapter headings include nothing on the foreign exchange value of the dollar, nor do they discuss international capital movements in detail with the use of the weekly data. Entirely properly, the *Survey* is directed to finance in the broader sense.

Within this area, it is possible to take exception to the emphasis given by the authors to the events of 1951. The nationalization of the Abadan refinery in Iran and the collapse of commodity prices from the giddy heights reached in March of that year are both discussed only tangentially, though they cast their shadow far into the future in the United States' financial relations with the rest of the world. No mention is made of the United Nations' experts' report, *Measures for International Economic Stability,* although the other two UN reports by experts are referred to.

The usefulness of the *Survey,* already high, might be enhanced by the inclusion of an annotated bibliography of documents and articles bearing on issues. Much of this is already made available, but strewn through the footnotes, from which it must be exhumed via the index.

What must be admired is the authors' capacity to remain above the battle and to describe issues and even to characterize reactions but not to take sides. Most of the adjectives used are descriptive but involve no subjective evaluation. The nearest thing to a slip in this regard is the reference to an article by John Foster Dulles as "lucid." This departure from the high standard of aloofness otherwise maintained may perhaps be forgiven on Freudian grounds in a Republican year.

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The Pattern of United States Import Trade Since 1923. By JOHN H. ADLER, EUGENE R. SCHLESINGER and EVELYN VAN WESTERBORG. (New York: Federal Reserve Bank of New York. 1952. Pp. 136.)

In this study, covering the period 1923-1950, the authors have investigated the U.S. demand for imports, compiling separate series for the main geographic areas of origin. For each area—with a few unimportant exceptions—there are value, price and quantity series for crude foodstuffs, manufactured foodstuffs, crude and semi-manufactured materials, and finished manufactures, as well as

for total imports. This detailed treatment is of particular help in studying problems that have a varying geographical impact, such as the effect of our business cycle on imports from the Sterling Area, and thus on the British balance of payments.

Two conclusions stand out. Confirming earlier findings, the authors agree that the level of economic activity and real income in this country were the primary determinants of our imports from each area.

The second, more surprising, conclusion is the estimate of price elasticity for finished manufactures, particularly those from Western Europe (the European Recovery Program countries). The authors believe that a change of 1 per cent in the relative[1] price of this category would change our imports (in the opposite direction) 2 to 3 per cent in volume terms. For many commodities, the price elasticity tends to be greater the larger the proportionate change in price; and it also becomes greater the longer the time period considered. This is contrary to the belief of many students, some of whom have felt that the elasticity for this group may even be less than 1.

Some of the other findings regarding price are similar to those for the domestic economy that F. C. Mills' work[2] has shown. Over the cycle, the greater the variation in price, the less the variation in quantity, and *vice versa.* Prices of primary imports fluctuate more than those of finished manufactures. Geographically, this means that the ERP export price structure is more stable than that of Latin America or the outer Sterling Area, but the ERP volume of sales, and thus employment, faces greater fluctuations.

The possibility of the price mechanism serving to facilitate the substitution of foreign for U.S. goods in the U.S. market is greatest for finished manufactures. Not only would the total volume of our imports of this group rise if their prices fell, relative to competing U.S. goods, but their relative share of our market would also increase.

As compared with the prewar period, our gross national product in real terms has risen more than the volume of imports. For raw materials and semimanufactures this may indicate a change in the fundamental relationship to domestic activity, although the authors believe that for small year-to-year changes the prewar relationship still holds. For finished manufactures, however, it is thought that the relatively greater rise in foreign export prices compared with competing U.S. goods is a principal cause of the downward shift since prewar in the proportion of these imports to domestic output, and that a reversal of this price shift would restore the prewar ratio.

The postwar decline in the proportion of our imports coming from the ERP countries was noticeable also in the interwar period, and reflected the downward trend for finished manufactures imports in general. Part of the recent relative loss may have been caused by the fact that World War II stopped almost all imports from continental Europe, thus transferring U.S. demand to other sources (including domestic suppliers). But part of the shift can be

[1] Relative to the price of finished manufactures from other areas including those produced in the United States.

[2] *Cf., e.g., Prices in Recession and Recovery* (New York, 1936), Ch. III.

attributed to the great increase in our demand for durables, items which have always been negligible among our imports.

Within the ERP group the relative decline has been greatest for those countries whose export prices have risen the most, proportionately. The average price level for the group as a whole has also risen relatively to our prices; this, the authors believe, led to a shift away from ERP goods. Their conclusion, however, may not be the only important explanation; it is possible that the dislocations caused by the recent war curtailed supplies so much—particularly in the export trades, whose connections with this country had been disrupted for almost six years—that the mechanism worked from a shortage of goods to a price rise. In other words, the greater the shortage of a particular product, the greater the relative price rise, and the greater the relative fall in its share of our imports.

One assumption which may be questioned is with respect to the elasticity of supply of finished manufactures to the U.S. market. The authors assume almost perfect elasticity over the relevant range. It is true that goods can be shifted from the ERP home market if the suppliers so desire. But this may not be as simple as the authors imply. Even if prices are more attractive in this country, it may be difficult to establish sales outlets—in fact, in view of the vagaries of our market and tariff policies, it may not be worth the risk. For example, let us assume a strong demand for automobiles in this country. On a purely comparative price calculation it might pay to ship autos here rather than sell them at home or in other markets. However, there may not be the necessary repair and service stations to maintain the cars; there may not be the dealers' outlets willing to stock new—and, to the American consumer—strange products. Moreover, if the sales effort is successful, a tariff may be placed on this item, ending the imports and making the previous sales efforts worthless. Hence, the supply inelasticity may be quite high, particularly when the normal inertia supplements the other obstacles. So long as other profitable markets exist into which entry is less difficult, the greater profitability of the American market may not offset these other fears.

It is in the price policy implications that we find another possible weakness in the study, although one that is probably inevitable. Based on historical data, the study shows that a decline in the relative price of finished manufactures imports would increase the volume of sales so much that total receipts would rise. The obvious policy inference is for foreign manufacturers to reduce costs and prices. But what cannot be certain is the reaction of U.S. competitors. If the per unit margin is sufficiently large, our prices can be reduced to meet this outside threat; in other words, although a relative fall in foreign sales prices would boost imports, any serious inroad into domestic markets might result in sharp reactions by our own producers, even ignoring the further complication of pressure to increase the tariff. The only two widespread decreases in foreign finished manufactures' prices relative to U.S. competitors were those associated with the devaluations in 1931 and 1949. In both cases the income effects on sales were so strong that producers may not have been aware of the influences of the accompanying price changes. It will be recalled that 1931 was a year of almost steadily declining incomes and output in this country, while in mid-

1949 the recovery from the preceding recession began. If, in a future situation, foreigners reduce their prices relatively, and if it is clear that a successful penetration of our markets results from this policy, U.S. producers may react pricewise more vigorously. Hence, although a relative price reduction might aid foreign sales, in fact, it might also call forth corresponding cuts by U.S. firms, so that the gain to the foreign seller would thus be much less than is implied by the calculated elasticity.[3]

Another weakness of the study is the assumption regarding the constancy (over the relevant ranges) of the price and income relationships. In the study both arithmetic and logarithmic equations were employed. The former implies that the marginal propensity to import was assumed constant; the latter implied "that the income and price elasticities are constant throughout the entire range of observations and independent of the size of absolute changes" (p. 49). Yet, it may well be true that at different levels of national income, a given change in incomes will produce different changes in imports. In a depression, with much unemployment of domestic resources, increases in income may go mainly into the purchase of domestic supplies, while at near-full employment a greater impact will be felt on foreign supplies because of the tighter domestic supply situation.[4] Again, the impact on specific commodities, and thus on different areas, may also change with changing income levels. The 1950 upswing in U.S. economic activity after the Korean outbreak boosted certain imports much more than a similar upturn from a lower level would have done. Steel and chemical imports from Western Europe rose much more than would have been the result had the economy been at, say, only 75 per cent of capacity.

Implicit in the preceding criticism is the observation that a given change in national income (or GNP), even from the same absolute level, may not always have the same impact on imports. An upturn resulting from rearmament may so concentrate demand on, say, the domestic steel industry, as to result in capacity operations—and thus the need for more imports—at a national income level lower than an upturn resulting from government expenditures on public works. In the former, steel imports (and thus total imports) would rise more, proportionately, than in the latter case, even though the proportionate change in national income were the same in both possibilities.

It is exceedingly difficult—if not impossible—to allow for these various possibilities. Indeed, even if the functional relationships suggested could be deduced, the extra work required for the refinements and the more complicated mathematical equations resulting, would probably not be justified. Hence, these observations are to be interpreted as qualifications, rather than rejections, of the findings.

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[3] In fairness to the authors, it should be noted that they have recognized these two influences—price and income—and have employed calculations intended to separate them out. *Cf.* their study, pp. 50-51, 59; also, Ch. v.

[4] *Cf.* the case of interwar Canada in the study of E. Munzer, "Exports and National Income in Canada," *Can. Jour. Econ. Pol. Sci.*, Feb. 1945, XI, 35-47.

Business Administration

Economics of Business Enterprise. By LEONARD A. DOYLE. (New York: McGraw-Hill. 1952. Pp. xiii, 343. $5.00.)

Professor Doyle has written a text whose aim is to make marginal analysis the central theme and integrating principle of an upper division and graduate training in business. In particular he puts forward techniques that he believes would enable practicing businessmen to apply economic analysis directly to managerial decisions. In addition, Doyle tries to give the student the equivalent of a rigorous course in intermediate economic theory. His book is an unusual combination of topics, some of which are treated in an unusual manner.

The first two chapters are introductory, setting the discussion of the business enterprise system in a broad frame. Doyle describes the structure of the American economy through the device of an imaginary trial in which the private enterprise system is charged with suppressing competition and promoting monopoly. In the course of this trial, basic data describing the number, size, industrial composition of firms, profitability of corporate firms by size, national income variations, measurement, and sources are set forth. The use of the mock trial form helps to kindle interest in what might otherwise have been a dull presentation of data and statistical methodology.

The second chapter deals with two quite separate subjects. The first is the nature, problems, and structure of the firm. Combined with this discussion is a treatment of the rationale of a free enterprise economy, concluding with a crisp, penetrating discussion of the discrepancies between the rationale and the real economy. The contents of this chapter are excellent, though its organization leaves much to be desired.

There follow two chapters dealing with the nature of pure competition and demand, with emphasis upon the benefits to the individual businessman of escaping the rigors of competition, primarily by restricting entry. In explaining the operations of pure competition, Doyle works through an agricultural illustration, employing elaborate numerical computations as well as the routine geometric tools. The discussion of market demand is commonplace, but adequate.

In the second of these chapters entitled "The Behavior of Market Demand," Doyle discusses monopoly and imperfect competition, indicating briefly how they come to pass and their attractions to the businessman. The arrangement of topics is somewhat perplexing but the author's meaning is clear enough. Missing from this chapter is the basis for Doyle's conclusion (p. 330) that . . . ". . . the elasticity of demand *decreases* as the quantity is increased," which he says was explained in this chapter. The income pyramid described in detail by Doyle tempts one to infer, on the contrary, that the elasticity of demand frequently rises at lower prices and larger quantities.

As illustrative of imperfect competition, Doyle discusses the professions and retailing. His discussion of the professions is a cursory but interesting essay concerned as much with the socialization of medicine as with anything else. However, it contributes little to the author's fundamental objective and might have been omitted.

Doyle's discussion of imperfect competition among retailers is one of the more difficult parts of the book. It introduces some improvisations and variations on the break-even chart that this reviewer has not encountered before. In addition, it deals with various problems, among them "fair" trade laws, the mark-up method of pricing, and the reasons for diverse types of retail outlets. While this chapter covers important subjects and is anything but routine and unimaginative, it probably will prove troublesome to student and teacher alike because of the brevity with which major problems are touched upon. For the most part, the chapter sets up apparatus that will enable a retailer to decide how much it must sell at a given level of mark-up to break even and to cover its costs, including a target rate of profit. While retailers probably do think in terms of mark-ups rather than absolute price, the transformation of one into the other is hardly vital for basic understanding and might not justify the effort required to master it. Specialists in the subject of industrial pricing will, however, find it of interest.

In discussing the advantages of large-scale operation, Doyle covers more than is ordinarily treated under that head. He discusses at some length the determination of obsolescence costs and the suppression of new machines and methods. This chapter is careful and competent. The use of twelve involved diagrams, however, threatens real difficulty for even the best graduate students of business.

Like most other chapters, the one treating costs of distribution represents a collection of interesting and illuminating remarks combined under a framework of organization that is somewhat strained and novel. Much of this chapter is devoted to a discussion of vertical integration and the diverse movements of price and alleged differences in demand elasticity at various stages between raw material production and final purchase.

The most strategic chapter in the book is entitled "The Marginal Analysis and Practical Business Operation." It is here that Doyle elaborates the break-even chart, relating it closely to the marginal cost-marginal revenue equality of traditional price theory. In addition, reference is made to conventional business practice and the amount of information available to the average businessman. This section of almost thirty pages is tightly written. While no careful count has been made, the word "if" probably appears more frequently than any other, for supposition follows supposition and the reader is required to work through numerous successive examples. In effect, these examples require the reader to make some numerical calculation to determine whether revenue rises more than cost from a specific circumstance.

We learn in that chapter that the break-even and profit charts are the techniques that enable businessmen to apply economic analysis to managerial decisions. If I understand Doyle rightly, he concludes that economic analysis contributes to practical business operation by: (1) directing the decision-maker to ask whether a particular action contributes more to total revenue than it adds to total cost; (2) calling attention to the possible effect of output on unit cost; and (3) directing thought to the responsiveness of sales to price changes (p. 333).

The chapter which follows applies the break-even chart directly to decisions of multi-product firms, and completes the discussion of price and output decisions of the individual firm. Subsequent chapters are concerned primarily with general pricing practices and their social implications.

Chapters 11 through 13 deal with price leadership, uniform delivered price systems and price discrimination. These chapters depart little from the conventional treatment of these topics, though there are many statements that are not proved or shared by economists generally. They will not injure the advanced business student, however, for his prejudices are likely to run counter to Doyle's.

The last two substantive chapters attempt to explain the incomes of labor and management and discuss the interest cost and financial solvency problems of the individual firm. These chapters will do little more than afford an opportunity for teachers so inclined to introduce these topics. Apart from well-balanced statements about labor relations in general, the first of these simply makes difficult to comprehend the simple dictum that employers should not pay workers more than they contribute to total value of output. The final chapter, entitled "The Economics of Finance and Bankruptcy," touches on less familiar ground, but here again straightforward concepts are over-elaborated and probably obscured by the author's desire to say everything geometrically.

It is difficult to make general statements about a book that is so uneven in its separate parts. On the debit side, Doyle may have made a strategic error in making the book so short, or, equivalently, in deciding to do so much. Although his writing style is crisp and clear much of the time, the better-than-average student probably will find this book very difficult. Part of the student's difficulty will result from the book's organizational weaknesses. Especially in the arrangement of topics and sequence of ideas within individual chapters is improvement possible. The book also suffers from a shifting viewpoint. Business practices are discussed from the standpoint of owner profits and social benefit without clear indication of which viewpoint is being applied. Also, greater justification for the heavy reliance on the break-even chart than has been offered would be desirable. The reader waits in vain for discussion of the difficulties that are faced in applying it in concrete cases and for an examination of alternative methods that might be employed to obtain similar results. Finally, Doyle, as most other authors writing in this general field, makes numerous statements about business procedure or conditions that are unsupported. They are stated as if they were generally accepted conclusions, even when they are minority, though possibly correct, opinions.

On the credit side, Doyle undertook an eminently worthwhile task. The value of economic analysis for a practicing businessman has long been a major problem confronting college teachers and administrators. That this reviewer does not share Doyle's conclusion on this matter is irrelevant. Each reader can decide for himself whether or not Doyle has shown that refined economic analysis is an important aid to a practicing businessman. Doyle certainly has been intelligent, industrious and imaginative in trying to make economic

analysis relevant and useful to business operation. In addition, from my limited knowledge of the literature, Doyle has introduced refinements for break-even chart analysis that some will find useful.

The reader will almost certainly come away from this book with the feeling that it is intelligent, imaginative and sensible. Doyle clearly could write a lucid, original and illuminating book about business operation and decision-making. However, he did not quite reach the mark in this book.

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Marketing in the American Economy. By ROLAND S. VAILE, E. T. GRETHER, and REAVIS COX. (New York: Ronald Press. 1952. Pp. xviii, 737. $6.00.)

The appearance of this book was eagerly anticipated by many teachers in the field of marketing because of the recognized standing of its authors and because teachers were led to believe that a new approach to the subject would be taken. It does differ substantially from other widely used introductory texts in marketing.

The authors state at the outset that "We have a common meeting ground . . . in our conviction that students can best be introduced to marketing by a textbook whose primary point of view is the transcendent importance of this social institution as a vast and complex function of our free-enterprise economy." This statement together with all it implies to people trained in the social sciences serves well to characterize the book. Marketing teachers recognize that the subject can be approached in the manner suggested or primarily from institutional, functional, or managerial points of view. Inevitably there is something of each in any comprehensive treatment of the subject but primary emphases may differ and, in this instance, the emphasis is definitely upon the social and economic significance of those activities which have come to be included under the term "marketing."

The authors think of marketing as *the* directive force in a free-enterprise economy. Specifically, the two principal or basic tasks of marketing are stated as follows: (1) to direct the use of resources and allocate scarce supplies in conformity with existing demand, and (2) to aid in making consumption dynamic in conformity with changes in our ability to cater to human wants." Furthermore, the concept of "resources" is a broad one as it includes human as well as natural resources and "the political and economic institutional arrangements under which we live." It is likely that these broad concepts are foreign to the thinking of many teachers of marketing. Perhaps they will not find themselves in agreement with this conceptual pattern but at least their thinking will be stimulated by the ideas presented, particularly those in Part I under the title, "Marketing in Our Economy."

The book proceeds with Part II, Specialization and Integration in Marketing; Part III, Buying and Selling; Part IV, Pricing; Part V, Marketing within and between Regions; and Part VI, Marketing Efficiency and Control. Part II is particularly well organized. After an opening chapter on channels of distribution there are excellent chapters on collecting, sorting, and dispersing mer-

chandise and on organization of the flow of ownership. These are followed by a too short discussion of wholesalers and retailers. The authors then consider nonprofit agencies, nonowning agencies, and, finally, questions of stability and change in marketing agencies. In this latter chapter there is a short discussion of the historical development of marketing. While, to the reviewer, this is a most welcome addition to any introductory textbook on marketing, there is too little of it. Marketing students need more historical perspective. After reading many textbooks in marketing, students may well think that goods and services were first marketed about the time of World War I.

Part III on Buying and Selling comprises a number of very short chapters on buying, on selling of primary products, and on selling by manufacturers and distributors. They are too short to be reasonably comprehensive, particularly the one on selling of primary products. The marketing of farm products is given but scant attention anywhere in the book. The last chapter in this section, on nonprice competition, while good, again is too abbreviated, particularly in its treatment of aggressive selling as a nonprice weapon. A better balance of attention to subject matter according to its relative importance would have been gained if this part of the book had been expanded, with more attention to the activities of the manufacturer, the wholesaler, the retailer and, perhaps, other intermediaries as marketing institutions. This expansion would have overcome a possible criticism that the student may actually know little of such institutions after reading this text.

In Part IV the authors have compressed much on pricing and price policies into about one hundred pages. The topics and subtopics are well chosen and, while the discussion of each is necessarily limited, these chapters do serve well as an introduction to the whole field of pricing. Chapters are included on the mechanics and procedures of pricing, pricing problems and policies, pricing by primary producers and manufacturers, pricing by distributors, and price structures and the price system.

Marketing teachers will have mixed reactions to Part V, Interregional Marketing. While the material presented is important, of interest, and new to introductory marketing texts, the question arises whether it should appear therein in view of space limitations. Publishers apparently feel that textbooks of 700 to 800 pages are of "right" length. This imposes difficult problems of choice of materials upon authors. Furthermore, knowledge in this field of marketing has grown so tremendously in the past three or four decades that authors must, of necessity, give much attention to problems of inclusion and emphasis. Part V, to this reviewer, is marginal material for an introductory text, and it might well be condensed or reserved, in part at least, for advanced texts on marketing or for those on marketing research. If this material was condensed, more attention could be given to marketing history, to marketing institutions, to the marketing of agricultural products and raw materials, and to other subjects which are dealt with too briefly.

The final section, Part VI, Marketing Efficiency and Control, is well integrated and well related to other parts of the book. The authors discuss market research and information; budgeting and accounting controls; the social performance of marketing, with particular attention to the problem of measuring

efficiency; and government regulation To a greater extent than in Parts II and III attention sufficient to satisfy the reader has been given to each subject covered. The nature of the attacks on marketing and the defenses against them and questions relating to the social significance of marketing are particularly well handled.

Teachers will find this book more difficult to use than other marketing texts. For its effective use the instructor will have to be better prepared and more competent in the social sciences. The concepts are so erudite, the materials presented so condensed that the student will need more explanation and discussion in class sessions than is usually the case. While the book has a most interesting and challenging approach, it may be questioned whether some teachers of marketing are sufficiently well prepared to use it effectively. Furthermore, it deviates so much from the texts most commonly adopted that the instructor may have to reorient his thinking on marketing. Still the use of this book will provide a stimulating educational experience for both instructors and students.

It might also be noted that the content of advanced marketing courses may have to be changed if this introductory text is used. The reason is that the instructor can not assume to as great an extent as with other texts that the functions and practices of market intermediaries are known by students, or that they have a thorough groundwork in all phases of marketing, particularly from an institutional point of view. Nor does the book lend itself well to a joint case-textbook approach in a course.

The foregoing comments should not be taken as critical ones but only as a recognition of the fact that the authors have seen fit to prepare a different type of book than has customarily been written in this field. There is penetrating analysis in this book, there are many bits of wisdom sprinkled on its pages, there is good organization of subject matter and much good writing. Moreover, in general, collaboration among the authors has been effective. But whether such a book as this meets the requirements of a good introductory text unless the first course in marketing is postponed to the junior or senior year will be questioned by many marketing teachers. Few will doubt that the book should be required reading by students of economics and by those of business administration at some time during their college years.

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Industrial Organization; Public Regulation of Business

Defense, Controls and Inflation. Edited by AARON DIRECTOR. (Chicago: University of Chicago Press. 1952. Pp. x, 342. $3.50.)

In April 1951, the University of Chicago Law School sponsored a conference designed to "clarify the areas of agreement and disagreement" concerning economic controls during the post-Korea mobilization. Attending were 70

persons selected from business, law practice, journalism, labor organizations, legislative and administrative posts in government, and members of law and economics faculties. Working from a prepared agenda, separate sessions moved from monetary policy to fiscal policy, then to direct controls and on to the special problems Britain faces, and to the long-run effects of alternative control programs on free institutions. The verbatim report of the conference, introduced by a summary chapter by the chairman of the planning committee, constitutes the volume reviewed here.

From the opening session to footnote dissents to the one-chapter summary of the discussions, two sharply divergent policy programs were argued. One which was labelled that of the "Chicago School," consisted solely of vigorous monetary control carried out by Federal Reserve open market operations. No direct controls over wages, prices, or uses of materials, or over total amount or direction of use of investment funds should be imposed. Even a balanced budget, while helpful, would not be fundamental, for a deficit could be offset by still tighter money and the restricting effect of higher interest rates. Dissent from this extreme viewpoint was sharp and brought out an alternative program. The fundamental points of this plan were to place fiscal policy in the active rôle, with its effects reinforced by a marked, but not drastic, tightening of bank credit, and by varying degrees of direct control over investment and over the use and prices of scarce materials. Few argued for the general wage and price controls which were in force at the time.

These sharply different policy proposals are not new but the discussions of them provide an opportunity to reflect on the rôle of economists in one or more of the following steps in policy formation. (1) Clearly the economist is best qualified to provide, and is responsible for, the delineation of the underlying general relationship(s) in the area(s) of economics in which the problem falls. (2) Likewise, this reviewer contends, the economist must adapt such general theory, or blend it with other relevant theory, so as to develop the economic aspects of policy which the peculiar attributes of the particular problem require. (3) The further adaptation to what is legislatively and administratively feasible is the final step but one for which the economist has no particular competence. His counsel on probable economic consequences of alternatives may nevertheless be of value.

The proposal for sole reliance on interest rates as a mobilization period control does not go beyond step one. It is a literal application of the general doctrine that the price system is an efficient means for allocating resources. A business boom, a mobilization period, or full-fledged war all call for the same prescription. No attempt was made to show how, under the existing circumstances, resources would be reallocated with the speed and in the direction needed. Rather appeal was made to the logic of the price system, or how bad the alternatives are. On the specific point of whether interest rates could control inflation dissent was vigorous, but to criticisms of the plan the repeated response was in the vein of the poet's mountain climber, "Excelsior." Interest rates of 12 per cent would not bother Hayek (p. 59), for example. Such reasoning led Harrod to observe, "I should like to say that I do not think it is

an issue that can be decided by logic but rather by history and experience, and my contention is that history does not show that a tight credit policy can prevent the development of inflation in the kind of situation where there is a real demand for goods and services such as we have at the present time" (p. 64).

In like manner, but aimed directly at the logic of the "Chicago School's" position, was Hitch's observation that the theory which demonstrates the superiority of "free markets and the price system is a theory of 'comparative statics.' It shows that in a quite technical sense we can get an 'efficient' allocation of resources by using free markets in certain circumstances. But the method of analysis used is comparative statics. I know of no satisfactory theory which shows either that the path which the economy takes from one position of equilibrium to another is an optimal one or that, when time is important, we traverse that path at the optimal of speed" (p. 218).

Economists may debate whether existing theory gives insight into the character of the inter-equilibrium path, but that need not be resolved here, for it is speed and accuracy of readjustment of resource use which is fundamental. The risk of major errors cannot be taken for national security is involved. It was not economists at the conference who pointed out the irrelevance of Jewkes' argument that reconversion after the war in the United States and Germany showed how rapidly free markets could reallocate resources: Instead it was two lawyers and Senator O'Mahoney who indicated the fundamental difference between attracting resources temporarily from their long-term use, which is the mobilization problem, and releasing them to return to their long-term use, which is the reconversion process.

Equally important is the time pattern of developments during the mobilization period and the speed at which various controls can become effective, or cease to be necessary. That there had been the sudden impact of the Korean action, that there was under way a sharp buildup to a probably long-sustained higher plateau of military expenditures, got into the discussions only incidentally. What these facts meant for or against particular control programs or their duration does not stand out in the proceedings.

That the discussions did not deal systematically with such topics reflects the fact that the conference did not start with a consideration of the unique aspects of the mobilization problem. Had this been done, attention would have focussed quickly on step two mentioned above. That this was not done indicates once more the viewpoint of those who prepared the agenda for they are of the "Chicago School." To them mobilization is not or should not be dealt with as a unique problem. That is the logic of their position, although that logic is reinforced by step three considerations to the effect that controls may damage the free market system permanently.

Proponents of the composite program, which would include at least some direct controls, also had their views of political desirability. These included political inacceptability of very tight money and of falling prices and wages in sectors of the economy from which demand shifted. Consequently the monetary program would be ineffective and inflation substantial and real damage would be done to free institutions.

In noting the position taken by participating economists, one finds a fairly high, but not perfect, correlation between the extent to which individuals had been involved in public policy formulation and the program they supported. In general those who had had active rôles in World War II or Post-Korea mobilization, or had participated in the policy studies by such groups as the Committee for Economic Development or the RAND Corporation, favored the composite program which included at least some use of direct controls. Does the view of economists in these positions reflect a bending to political expediency, or a greater awareness of the unique problems of a mobilization period? Or do those who adhere to monetary policy only, or even that plus active fiscal policy, understand the economics of the situation more clearly; or are they blind to essential conditions? The reviewer frankly is of the former school and suggests that the "discipline of responsibility" aids in the formulation of, but should not dominate, economists' views on policy. When the lay participants in the conference referred to the "highly abstract" character of much of the discussion, this was their way of asserting that the proponents of the exclusive use of tight money had not adapted their analysis of the market system to the facts and forces of a mobilization period.

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Grössenordnung und horizontale Verflechtung in der Eisen- und Stahlindustrie der Vereinigten Staaten, Grossbritaniens, Frankreichs, Belgiens, Luxemburgs und Deutschlands. By HERBERT STEINER. (Kiel: Institut für Weltwirtschaft, Universität Kiel. 1952. Pp. v, 119.)

This very well documented publication investigates the relative size and horizontal integration of the iron and steel industry of the six countries mentioned in the title of the book. The relative size of the firms is measured in two ways: first by comparing the volume of output, and second by comparing the amount of capital investment. The relatively greatest concentration of economic power is found in Luxemburg where in 1950 the leading concern (ARBED)produced 64.5% of the raw steel. Next in line was Germany (Vereinigte Stahlswerke, 38.7% for 1938), the United States (U.S. Steel Corporation, 32.5%), Belgium (group Cockerill, 32.1%), France (group de Wendel, 19.5%) and Great Britain (United Steel Cos., 13.1%). The schedule of capital investment does not completely parallel the above sequence. In France and Great Britain the top producers are not the ones with the largest capital investment.

Much more interesting than the above, purely statistical, survey is the part of the publication dealing with horizontal integration. Here, the author shows the basic difference between industrial organization in the United States and in the European countries. The concentration and growth of heavy industry in the former has taken the form of holding companies (U.S. Steel and Bethlehem Steel) or outright mergers (Republic Steel) rather than of loosely organized concerns based on mutual shareownership and interlocking directorates customary in Europe.

Unfortunately the author gives us no information at all of the horizontal integration in Germany prior to May 1, 1952, the date on which the disintegration of German heavy industry by order of the Ruhr Authority was completed; nor does he draw any conclusions concerning the effects of horizontal integration on output and price formation.

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Public Utilities; Transportation; Communications

Atomic Power—An Economic and Social Analysis. A Study in Industrial Location and Regional Economic Development. By WALTER ISARD and VINCENT WHITNEY. (New York: Blakiston. 1952. Pp. xi, 235. $4.75.)

Highly significant public policy issues may arise during this session of the Congress as the nation's legislators seek to clear the statutory way for future industrial development of electric energy from nuclear sources. Looking beyond these domestic policy problems, Isard, an economist, and Whitney, a sociologist, have joined forces in a successful interdisciplinary effort to analyze the more distant influence of nuclear power upon the location of large fuel- and energy-consuming industries and upon the development of industrially developed and undeveloped economies. The study follows by a year and a half the rather similar one prepared, under the direction of S. H. Schurr and J. Marschak, by the Cowles Commission.[1] Both are useful preliminary explorations into uncharted territory, that alluded to in Section 7(b) of the Atomic Energy Act of 1946. This directs the U. S. Atomic Energy Commission and the President to submit to the Congress a report, with legislative recommendations, setting forth their "estimate of the social, political, economic, and international effects" when the industrial, commercial, or other nonmilitary use of atomic energy has been "sufficiently developed to be of practical value."

The Cowles Commission study made rather optimistic assumptions concerning the future cost of nuclear power, but after surveying a number of large fuel- and power-consuming industries found that the probability of substantial savings in cost appeared small, although locational shifts might be facilitated by nuclear power in special circumstances. The findings of Isard and Whitney are not essentially different, although the method of analysis diverges in certain essential aspects, to be mentioned later.

At this stage of our knowledge Isard and Whitney are compelled to speculate on, rather than to measure, the expected impact of future nuclear power utilization. They first review the open literature on reactor technology (Part I) although the point of doing so is hardly made clear in economic terms. While recognizing that military needs during a long period of international tension are likely also to promote technical progress for peaceful applications, they

[1] *Economic Aspects of Atomic Power.* An Exploratory Study Under the Direction of Sam H. Schurr and Jacob Marschak (Princeton, 1950). Reviewed in this journal, December 1950, XLI, 994-95.

fail to appreciate the significance of possible dual-purpose nuclear reactors, producing as joint products power and fissionable material. After reviewing (in Part II) the scanty literature available on estimated nuclear power costs, practically all of it enthusiastically inspired during the first year after Hiroshima, Isard and Whitney take a skeptical attitude toward *specific* unit cost estimates, notably those of Schurr and Marschak, derived from the so-called Thomas report (1946). They quite properly conclude that no one can yet "really predict even a meaningful range of costs of atomic power at future stages of development" (p. 25). They prefer instead to think in terms of the levels to which nuclear power costs must fall to affect production costs, location of industry, or the introduction of new processes. The weakness of the specific cost approach can be readily demonstrated. If the cost of electric power from nuclear sources is dependent in part upon the "price" of byproduct fissionable material, then the specific cost of electric power becomes indeterminate.

The direct cost-saving effects of nuclear power, Isard and Whitney proceed to show, are likely to be small, noting that purchased energy and power for United States manufacturing industries have never exceeded 7 per cent of the value added by manufacture. They look momentarily at possible indirect effects, concluding that Leontief's input-output analysis of interindustry relations may hold some hope of providing a method of measurement. After analyzing the theory of industry location, the authors state that "any lowering of power costs based on nuclear energy will hardly be of sufficient importance to nullify other locational forces. Any wholesale relocation of industry is unlikely" (p. 71). Case studies are made of the cement, glass, iron and steel, and aluminum industries.

In Part III the authors assess the impact of nuclear power upon economic development and upon regional economies, recognizing the contributions of such sociologists as W. F. Ogburn, H. Hart, and S. C. Gilfillan, who have stressed the cultural factors impeding or facilitating technological innovations. Isard and Whitney find that utilization of nuclear power, as for other innovations, will be determined by the conflict between "cultural resistances" and the effective need for low cost power. Thus, in industrially undeveloped nations cultural resistances and lack of real demand for energy resources may combine with the shortage of capital and skilled personnel to prevent significant utilization of nuclear power. An interesting case study is made of Brazil, an essentially agricultural economy deficient in both petroleum and coal. Power, they conclude, is unlikely to be the key to the economic growth of such industrially undeveloped nations.

Turning to industrialized areas, the authors suggest that the "stage of industrialization" may greatly influence the contribution of nuclear power but the brief for this seems hardly convincing. There is no disputing the fact, however, that while mature economies may possess requisite capital and technical resources, perhaps the controlling factor will be the extent to which aggressive industrial leadership, possibly assisted by government, will feel impelled to undertake nuclear power development. After comparative study of a number of highly industrialized countries, Isard and Whitney somberly conclude that

"among major nations, the United States appears least likely to improve its *relative* economic status through atomic development" (p. 187). Their final conclusions are realistically restrained. They foresee major cost savings as unlikely, and expect only limited commercial use of nuclear power. They concede that there may arise new industrial processes and a host of indirect effects not now discernible. This study is not the last word on a speculative subject, and the authors would be the last to suggest that it is.

Having benefited by two useful exploratory investigations, economists may now well ask, "How should we, and other social scientists, usefully proceed to analyze the advent of nuclear power?" Enumeration of the topics both studies failed to explore may be helpful. First, neither study assayed what small savings in power-generating costs might mean to the electric utility industry as such, having considered electric power consuming industries only. It is in the electric utility industry that nuclear power must make its economic way. Second, both studies were preoccupied with conventional industrial applications of relatively low cost electric power, and avoided consideration of specialized applications where nuclear power, because of its special technical characteristics, may be a peculiarly attractive and economical alternative. Nuclear power plants may ultimately have special advantages either as small "package" plants (for use in isolated areas, in ships and cargo planes) or as large complexes, exceeding 1,000,000-kilowatt capacity, located in high cost areas of heavy consumption. Third, one would hope that a careful analysis will be made of the nation's long-term need for nuclear power weighed against the vast conventional energy resources likely to be available over the next half century, but with rising fuel costs pushing electric power rates higher. Does industrial nuclear power on economic grounds warrant a major national effort? Finally, and most important perhaps, it is about time that economists and other social scientists began to direct special attention to the immediate issues of national economic policy impinging on the introduction of nuclear power for industrial purposes.

The U. S. Atomic Energy Commission recently announced that four industrial groups had submitted comparatively optimistic interim reports on the industrial development of dual-purpose power reactors. Such reactors were said to be technically feasible; the problems remaining are essentially economic and political. Should it prove possible to declassify these reports for public use, economists will have available for the first time technical and economic data needed for fruitful analysis of long-range implications, as well as imminent economic problems.

Here are some of the notable issues appearing, as the present provisions of the Atomic Energy Act of 1946 become impaled on the emerging facts of industrial nuclear power development: government monopoly is provided in the Act; should a new public policy be established permitting private ownership of nuclear power plants? How can the development of nuclear power be made consistent with the overriding requirements of the national defense? Should fissionable material needed to fuel civilian reactors be diverted from military uses? Should the federal government guarantee a long-run market for industry-produced plutonium? What rôle should such federal agencies as the TVA

and the Department of the Interior play in the industrial development of nuclear power? These and many other questions are now arising to challenge economic analysis in the formulation of public policy.

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Transportation: Principles and Problems. By T. C. BIGHAM and M. J. ROBERTS. 2nd ed. (New York: McGraw-Hill. 1952. Pp. xvi, 710. $6.00.)

The present volume, which is a revision and enlargement of a well-known text on transportation, is similar in scope to other texts in this field, but, as might be expected, differs in emphasis and organization. Since it is of moderate length and somewhat shorter than its leading competitors, some topics inevitably are treated very briefly. Opinion will doubtless differ widely as to the wisdom of the authors' allocation of the available space. The reviewer's opinion is that most subjects receive adequate attention and that in general the present volume is an improvement over the first edition. The most significant improvement, in his view, is the addition of chapters entitled "Transportation and Production" and "Transportation and Exchange." These cover the important subjects of the effect of freight rates on the location of industry and the relation of freight rates to the prices of commodities.

On the other hand, the reviewer feels that somewhat fuller treatment of a few topics would have been desirable. One such topic is transportation cost, which is good as far as it goes but which might well have included some discussion of empirical studies of cost, such as the rail and motor cost studies prepared by the staff of the Interstate Commerce Commission. A second topic which, in the reviewer's opinion, deserves somewhat more space than the nine pages allotted to it in this volume is public policy with respect to control over entry, especially as regards motor and air transportation. Third, the legal obligation of carriers with respect to such matters as acceptance of shipments, supply of equipment and liability for loss and damage would seem to merit at least a substantial portion of a chapter, whereas only about one and one-half pages are devoted to them. Finally, one other general topic which might well have warranted further attention is the organization and procedure of the federal transportation regulatory agencies, proposals for the reorganization of these agencies, and the relation of regulatory agencies to the courts and to the executive branch of the government. In contrast more than half of the chapter on the general level of rates (32 out of 58 pages) is devoted to the question of valuation and rate of return, an allocation of space which seems somewhat excessive in view of the relatively subordinate rôle played by these matters in discussions of transportation policy at the present time.

The general plan of organization of this volume is to treat successive topics "across the board" with reference to each agency of transportation instead of giving a complete treatment of each agency of transportation in turn. The reviewer expresses no opinion as to the respective merits of these two general

approaches but he would recommend at least two changes in the organization of individual topics. One of these is in connection with the treatment of transportation cost. Chapter 6, entitled "Transportation Costs: Economic Basis of Rates and Regulation," discusses constant and variable cost, common and separable cost, discrimination and ruinous competition; while Chapter 12, entitled "Principles Underlying Particular Rates," considers the economies of full utilization, long-run decreasing cost and value of service. The purpose of the authors in thus separating the treatment of these topics is apparently to make Chapter 12 serve as an introduction to the succeeding chapters on rate structures and the control of discrimination. The reviewer is of the opinion, however, that considering the close interrelationship of the topics mentioned there would have been a clear advantage in treating them together in the earlier chapter.

The reviewer's other principal comment with regard to the organization of the volume is that a more unified treatment of the problem of transport coordination would have been desirable. The volume contains much good material on this subject, notably in the chapter on interagency rate relations, but it might be difficult for students to obtain a comprehensive view of the various aspects of this intricate problem because the various aspects are not drawn together and related to one another in a single chapter or series of chapters.

The authors' views regarding transportation policy are conveniently summarized in the concluding chapter. Among other things they recommend that the declaration of national transportation policy in the Interstate Commerce Act be broadened to embrace promotion as well as regulation and to include air transportation in addition to the agencies presently covered. They favor centralizing regulatory authority over all forms of transportation in the Interstate Commerce Commission, maintaining the status of the Commission as an independent agency, and centralizing promotional functions in a Department of Transportation or in a division of the Department of Commerce. They present in some detail recommendations for the relaxation or liberalizing of regulation in some directions and for the extension of the scope of regulatory authority in others.

With a few changes in the order of assignment of chapters along the lines suggested above, and with the introduction of supplementary material at a few points, the reviewer believes that this volume should prove to be a satisfactory text for a general survey course in transportation.

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Economics of Transportation. By RUSSELL E. WESTMEYER. (New York: Prentice-Hall. 1952. Pp. viii, 741. $6.00.)

A writer of a text in transport economics must necessarily select an emphasis, for the volume of material and problems to be described and analyzed in the field is too large to permit complete treatment. In his approach, Professor

Westmeyer has emphasized the public utility characteristics of transportation and the railroads among the major agencies. Thus, the text will appeal most to those who desire to give primary attention to the history and development of regulation and to railroad problems. Notwithstanding, considerable discussion is found of problems in air, motor and water transport, although subsidy and its effects upon the railroads receive the most thorough analysis; and some problems, such as the economics of highway investment, are scarcely mentioned. Freight forwarding, railway express, parcel post and Pullman services are discussed briefly, but many will regret elimination of reference to international shipping, the rôle of the automobile, and intracity transport.

The text is somewhat long for a one-semester course in transport economics, but with supplementary readings in periodicals and monographs, it could additionally be used in a transport problems course. It is readable and the exposition is clear. The author desirably avoids use of too many details of interest only to technicians and offers students the aid of numerous background explanations. The general tone is objective. Many economic problems are raised for discussion, with little tendency to express definitive judgments. Two methodological features open to criticism are the slight use of maps and charts showing facilities, traffic flows and the relation of rates to distance, and the infrequent reference to the best periodical literature. While other texts are cited frequently as suggested readings, the limited references supplied will not stimulate inquiring students to read more thoroughly in the appropriate theoretical works and in special monographs. However, helpful footnote references to leading regulatory decisions are found in chapters on regulation.

As with most transport texts, this one is heavily descriptive with respect to transport development, regulation, and rates and services. Although general statements of the nature of the transport market as a whole, the incidence of freight rate changes, the theory of transport demand, and the theory of rates are not found, much pertinent analytical comment appears throughout the book in reference to particular problems. Such analysis is usually clear-cut and competent. Nevertheless, many readers will regret the lack of a unifying frame of reference. As one proceeds through the chapters to the final two devoted to general transport problems and policies, one becomes increasingly aware that the author is concerned with an economic allocation of resources in transport. Yet Westmeyer does not inform the reader of that dominant theme at the beginning, nor does he comprehensively develop the theory and requirements of economic allocation. Much of what disturbs him about the resource allocation depends upon his assumptions of a normal oversupply of transportation, excess capacity in the railroad industry, and a high ratio of constant costs in that field. The economies of utilization and highly variable profitability in railroading are frequently mentioned in calling attention to the pessimistic consequences to the railroads and the public of the growth of other agencies relative to the railroads; of development of facilities in each agency independent of the effect upon other agencies; of the opportunity to operate which is granted to limited common carriers and to contract, private and exempt carriers; and of the excess transport supply resulting from subsidies to air and water trans-

port. And while the criterion of the position of the railroads is applied throughout, far less attention is given to the benefits of technological and service innovation, the advantages of reasonable excess capacity, the relation of transport to economic development, and the economics of investment. Does Westmeyer think a repetition of the restrictive tendencies of the 1930's in transport regulatory policy desirable? Some transport economists thought that the last war had ended the myopia of depression years in regard to adjustment of supply to demand!

Since transport economics basically must be concerned with allocation of resources, any text must examine the economic effects of promotional and regulatory policies upon the railroads. Those concerned with wastes in transport and continued private ownership of railroads will heartily endorse Westmeyer's frequent reference to evidence of the wasteful effect of subsidized transport. Admittedly, removal of subsidies would improve the allocation of resources, although Westmeyer appears at several points to exaggerate the benefits to railroads. But aside from measures to reduce subsidy, it is not shown how further coordination, which is described in confident and glowing terms, can be accomplished. Coordination is a nice word but its real possibilities cannot be developed without serious consideration of advantages of uncoördinated transport where subsidy has been removed and without close analysis of the workability of competition in transport. Neither is treated adequately in the book. The disbenefits of further control of interagency competition, a policy strongly implied, must be realistically appraised, not just mentioned and glossed over. And it is questionable that economic coordination can be evaluated solely in terms of high constant costs in railroading.

Despite the text's concentration upon regulation in each transport field and substantial exposition of regulatory policies, little attempt is made to develop comprehensively the economic results, positive or negative, which regulation and regulatory agencies have accomplished for the public. This is a common fault of most transport texts. Since transport functions through regulated markets, there appears an uncritical tendency to accept the regulatory structure and merely to describe key policies. While this may be informative, Westmeyer's statement of accomplishments of regulation in terms of the number of application and other cases which the Interstate Commerce Commission and the Civil Aeronautics Board have successfully handled is not very meaningful. It is not the process of regulation which is ultimately important, but whether it does, in fact, stimulate investment, innovation and invention; improve the allocation of resources; and work towards lower real costs. However, Westmeyer can be commended for drawing attention to some particular regulatory policies, such as certificate restrictions, which merit examination from the standpoint of end results.

The text is teachable and a useful addition to the growing alternatives available to those who offer courses in transport.

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Industry Studies

Competition in the Rayon Industry. By JESSE W. MARKHAM. (Cambridge: Harvard University Press. 1952. Pp. xvii, 245. $5.00.)

Professor Markham's analytical study is a useful addition to the literature of industrial organization and behavior. The principal sources of his factual information were the trade journals and Federal Trade Commission hearings, but the author has also had personal experience in the industry and has enjoyed the cooperation of some of its members in estimating the relationships between cost and size. He successfully explains the structure of the industry and its behavior in terms of its underlying technology and of its historical and institutional background and then proceeds to evaluate its performance according to criteria of competitive workability.

The rayon industry in the United States dates from the establishment of the American Viscose Corporation as a subsidiary of Courtaulds, Ltd. in 1910. Patent protection and requirements for technological "know how," even in the absence of patents, acted as barriers to entry and limited success in the early years to subsidiaries of established European producers or to companies which could secure their help. The rayon industry thus was highly concentrated from the start, and marked cost advantages to size have kept the number of firms small. There are now 16 firms, 4 of which do 75 per cent of the business.

The products of all firms are identical grade for grade which suggests that in a concentrated market, price tactics must be either cutthroat or cooperative. Among other influences, common historical links to members of the European rayon cartel have encouraged cooperation. Cooperation has been achieved through price leadership, which Markham identifies with Stigler's "dominant firm" and "barometric" types, and through outright collusion on at least one occasion.

The cooperative interest in price is restrained, however, by two other market factors: the competition of other fibres and a strong incentive on the part of each firm to maintain capacity production. With technological progress rayon fibre has become an increasingly close substitute for other fibres in an increasing number of uses, with a consequently high cross elasticity of demand. The industry also believes that stable rayon prices are attractive to the fibre-using branches of the textile industry. Thus competition of other fibres both limits the level of rayon prices and encourages their stability.

The limit to the level of prices is reinforced and the stability of prices is threatened by the interest of each producer in capacity production. Each plant at any point in time has an inflexible upper limit to output while unit and marginal costs rise if output is curtailed below this level. Seventy-five per cent of capacity is a critical level below which costs rise sharply. Thus if sales decline, production is maintained for a time and inventories rise. With a prolonged decline, output must be cut and costs rise. The smaller firms, owing to higher cost levels, are most seriously affected, and if the cut is severe, they are likely to shade prices in secret while list prices, which usually are the actual prices, remain identical for all producers. If output is curtailed more

than 25 per cent the price leader is likely to reduce list prices thus reestablishing uniformity and enabling rayon to compete with other fibres on better terms. In this way a cooperative solution is found to the conflicting aims of price stability and capacity operation under conditions of fluctuating and highly elastic demand.

The net results of this market pattern have been rapidly changing technology, rapidly growing production and steadily falling price. In the early days when rayon producers had an effective monopoly of an inferior product with few close substitutes, the profit rate was high. By the late 1930's with a vastly improved product competing closely with other fibres over which rayon producers had little control, the profit rate on investment was no higher than the average for manufacturing corporations. There is little evidence either of output restriction or of price rigidity at the expense of output.

Markham concludes that the industry is workably competitive and suggests no revision of its structure. He observes that rayon has enjoyed a sheltered market as a result of absolute tariff protection since 1930 and as a result of the support given to cotton prices by the agricultural programs. The gradual removal of tariff protection is suggested.

This reviewer finds little reason to differ with Markham's analysis of the industry on any important issue. My principal complaint is against a generally awkward organization. As one example, Chart 11 which is first discussed on page 49 does not appear until page 150. To some extent this type of thing is a matter of personal taste and at the most detracts from the pleasure and ease of reading. It does not prevent this from being a good, convincing and enlightening book.

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Land Economics; Agricultural Economics; Economic Geography

Resources for Freedom. VOL. I: *Foundations for Growth and Security.* VOL. II: *The Outlook for Key Commodities.* VOL. III: *The Outlook for Energy Sources.* VOL. IV: *The Promise of Technology.* VOL. V: *Selected Reports to the Commission.* A Report to the President by the President's Materials Policy Commission. (Washington: Supt. Docs. 1952. Pp. viii, 184; x, 210; viii, 43; x, 228; x, 154. $1.25; $1.50; 50¢; $1.75; $1.25.)

As economics has grown in scope and complexity, economists have begun to search for a single unifying concept around which to organize the massive collection of factual data and analytical tools which the student of economics is expected to master. Such attempts have failed so far, as in the brief vogue of consumer economics a few years ago, but the search by no means has been abandoned. Neverthless, if success should be achieved it may not be the result of direct search but may well come through serendipity.

Certainly, the President's Materials Policy Commission did not set out to look for a unifying concept for economics, even though a study of its five-

volume report leads one to conclude that it may have taken a long step toward finding it. The Commission was charged with the responsibility of attempting to discover how large a supply of materials would be required by the American economy in the future and whether such materials would be forthcoming. In its attempt to answer these questions, the Commission undertook to examine the growth potential of the national economies of the "free world," and in particular to project the growth of the American economy to 1975. This emphasis on economic expansion is so consistently present and so well related to the discussion of various economic problems associated with the procurement of materials that it emerges as the central theme of the Report. Indeed, the handling of the growth concept is so skillful as to suggest the possibility of a general reorientation and integration of the diverse, specialized fields of economics around this single unifying concept. For the Commission's study of the materials problem has led it into virually every field of economic inquiry and has resulted in a document which contains something of interest and significance for many more economists than those whose primary interest is in the field of resourses utilization.

Price economics is represented in at least three forms. First, there is the insistence of the Commission that "nothing should be permitted to interfere with the principle that materials should be obtained at the least possible cost for equivalent values" (Vol. 1, p. 20), and its equal insistence on the fundamental importance of real cost as distinguished from money cost. Second, the Commission emphasizes the institutional character of the price-making process and examines these interferences with the processes of price determination which tend to hinder the development of a given resource, encourage its wasteful use, or discourage the introduction of substitute materials in the face of growing scarcity. Third, the Commission discusses the nature of cyclical price instability in the world markets for raw materials and relates these instabilities to the problems faced by the American economy in assuring itself of a steady and uninterrupted supply of essential materials, both for economic growth and for national security.

In the field of international trade the Commission examines the effects on materials acquisition of the multitudinous barriers to trade which exist in the world today. It discusses the possibilities of private and public investment in foreign countries as a means of securing for this country adequate supplies of needed or essential raw materials. In line with its emphasis on growth factors the Commission pays particular attention to the problems of economic expansion in the so-called underdeveloped areas of the world. In line with its necessary concern with problems of national security and defense, the Commission discusses the military strategy of raw materials supply; and in doing so divides the world into two groups—the "free, non-communist world" and the communist group of national states. Both in its appraisal of the present world situation and in its recommendations for policy this Report offers substantial contributions to the economics of international trade.

There are, of course, sources of controversy in this part of the Report. If the projections of materials consumption for the United States and for the rest of

the "free world" are taken as forecasts they can only be challenged on technical grounds, but if they are interpreted as guides to policy a question immediately arises. For a policy based on these projections would seem to claim a lion's share of future output of many materials for the United States, while failing to allow for adequate aggregate expansion elsewhere. Some of the friendly nations are likely to describe this attitude as "economic imperialism," thinly disguised for the American reader by the Commission's justification of such policies by the principle of "enlightened self-interest."

On the other hand, the Commission does refuse to approve private or public policies of procuring our raw materials from the underdeveloped countries by the overt methods of colonial exploitation. Instead it cites with approval (and in Vol. V describes at some length) the policy of Venezuela which uses the revenues from the development of that country's petroleum resources to promote the education, social services and industrial progress of the Venezuelan people.

Turning to a third field of economics, it may be noted that the Commission attacks boldly and at length the delicate problems which arise in the general area of social control and economic planning. At the outset the Commission states that its members

> believe in private enterprise as the most efficacious way of performing industrial tasks in the United States. With this belief, a belief in the spur of the profit motive and what is called "the price system" obviously goes hand in hand (Vol. I, p. 3).

They further state that:

> We believe in a minimum of interference with these patterns of private enterprise. But to believe in a minimum of interference is not to believe that this minimum must be set at zero. Private enterprise itself has from time to time asked for helps, or restraints, or counterpoises from Government to keep the system working at its best; for this reason, among others, we have experienced for a long time a mixture of private and public influences on the functioning of our economy. The Commission sees no reason either to blink this fact or to decry it; as we see the future, the co-existence of great private and public strength is not only desirable but essential to our preservation (Vol. I, p. 3).

Probably there will be little disagreement with these propositions as a statement of principle. The rub comes when one attempts to define precisely what is included in, and excluded from, "a minimum interference with private enterprise." Throughout the Report there is a struggle with just such an attempt at definition. In Chapter 5 the Commission states the basis of its own policy recommendations as follows:

> The task of overcoming the materials problem is far greater than merely locating enough physical resources. The task is to overcome the multitudinous barriers described in the last chapter, but, more than that, to offer positive spurs and encouragements for developing and applying energy and technology to the materials field, for insuring a sufficient flow of capi-

> tal into it, for guarding our security, and concerning ourselves at every point with insurance against rising costs (Vol. I, p. 17).

Having set its goals the Commission then recognizes the impossibility of achieving them without a program of economic planning, saying that:

> Such a set of accomplishments will never be achieved at random: only a consistent policy toward materials can hope to bring them about. Policy means here intelligently directed action toward consciously determined goals—as distinct from aimless drift and blind faith. It is not enough to solve the problem "eventually"; while the Nation waits it can encounter such a succession of individual shortages as to disrupt the cost pattern and defeat an "eventual" solution altogether (*Ibid.*).

The Commission then deals with the problems of materials supply assigned to it by the President by setting forth in Volume I some seventy-eight separate recommendations, most of which are specific and technical in nature and nearly all of which require government action. In addition, the Commission states its conclusions or beliefs on a larger number of other points which involve implications for policy decisions. These recommendations and suggestions for private and public policy are justified as being attempts to minimize interference with the least-cost principle as applied to the utilization of resources in the process of production and trade. Equally, the Commission's emphasis on real costs makes it possible to interpret the least-cost principle as dealing primarily with marginal social costs rather than with marginal private costs.

Many economists will agree with the Commission's philosophy, but professional and entrepreneurial opinions concerning the specific recommendations are likely to vary widely, partly for technical reasons, but also because of doubts whether the Commission's recommendations can be implemented without doing violence to the Commission's own belief "that the bulk of the task of insuring adequate future materials supply can best be carried out by private business under the competitive market structure, operating within broad policy outlines which it is the responsibility of the Government to provide" (Vol. I, p. 17). But whatever one's opinion on this issue it must be agreed that the Commission in dealing with the problem of the functions of advance planning and with the rôle of government in the contemporary economic affairs of the United States so directly and explicitly, has made a substantial contribution to present-day political economy. By the same token, it also has contributed to our understanding of the institutional aspects of economic growth.

The above discussion has dealt with what might be called the by-products of the Commission's primary task. Viewed as a statement of the problems of resources utilization for the next quarter-century the Report is worthy of very high commendation. It is almost the first government report on resources to emphasize the economic and administrative aspects of resources development rather than the physical. It is, in effect, an elegant and massive superstructure built on the foundations provided by Zimmermann and Dewhurst; although there are, quite naturally, many unfinished and unfurnished rooms in the edi-

fice.[1] The Report contains studies and reports on dozens of raw materials and examines in separate volumes the future outlook for key commodities (Vol. II), and for sources of energy (Vol. III). In Volume IV most of these commodities are re-examined in terms of the promise of future technological change. Volume V completes the Report with a series of supplementary studies selected from the large number prepared for the Commission. Although the Report gives consideration to virtually all materials, its discussion of problems of soil and water utilization is brief, and recommendations in these fields (except for industrial water supply) are left to other agencies.

No review could summarize or criticize adequately the many aspects of this Report. The Commission's recognition of the rôle of technology in our society, and of our failure to make the most of the promise of technology or even to train enough technologists is very important. Equally significant is the emphasis upon the need for further research in many directions—economic, administrative, and social as well as in the areas of the physical sciences. The presentation in a public document of the projections to 1975 of population, Gross National Product, and disposable income in the United States is even more exciting. Such projections provide the essential base for any realistic discussion of the problems involved, and of the policies required to assure the nation of adequate supplies of materials in the future. Nothing could bring home better to economists or to laymen the great promise of the future, or the reality of the problems to be solved if this promise is to be realized. For as the Commission itself observes:

> The five volumes of this Commission's Report are offered only as a beginning. The most important conclusion this Commission presents is thus that the job (of assuring materials supplies) must be carried on cooperatively by Government and private citizens, not periodically at wide-spread intervals, but day by day and year by year.

The ultimate influence of the President's Materials Policy Commission will depend upon how well the entrepreneurs of the American economy, both private and public, take heed of this conclusion.

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Housing Market Behavior In A Declining Area. By LEO GREBLER. Publication of the Institute For Urban Land Use and Housing Studies. (New York: Columbia University Press. 1952. Pp. vii, 265. $4.50.)

Dr. Grebler's book is the first of a projected series of studies in the behavior of urban housing markets undertaken by the Institute for Urban Land Use and Housing Studies of Columbia University. The Institute is under the able leadership of Dr. Ernest M. Fisher, universally recognized as a pioneer in the scientific investigation of these fields.

[1] *World Resources and Industries* (Rev. ed.), by Erich W. Zimmermann, (New York, Harper and Brothers, 1951). *America's Needs and Resources*, by J. Frederic Dewhurst and Assoc. (New York, The Twentieth Century Fund, 1947).

Through the intensive application of some known research methods and the development of some new and ingenious series, Grebler has succeeded in tracing the history of New York City's Lower East Side over a fifty-year period beginning in about 1900. His is not merely a general descriptive history, but much more importantly, an attempt to analyze market behavior in historical terms, to separate cause and effect, to identify and interpret the interaction of forces. Probably the most significant contribution of the book, however, is in fulfillment of one of its stated objectives, namely, to identify the materials and techniques required for the study of market behavior. It is to be hoped that another of the objectives will be realized: "to stimulate a number of local studies in various cities, which in the aggregate should make it possible to arrive at both generalizations and differentiations in respect to market behavior at the bottom end of the housing supply."

This is an exciting and stimulating book for students in the field, and these words are used advisedly, because they can but rarely be applied to research studies. While this reviewer could hardly be said to have read the book breathlessly he did have his interest held throughout, even while examining the charts and tables and the appendices, and even while reading Grebler's carefully expressed limitations upon a generalization of his findings based upon this single exploration. The absorption with which the book is read is not only a tribute to the material, its logical organization and unusually good writing but very significantly, to the fact that the reader, probably for the first time in his experience, is provided an almost complete set of data on real estate market phenomena and the interpretations of a capable analyst with which he can agree or disagree.

While recognizing the signal contribution of this book, both as an investigation and as a prototype for other studies, it was impossible to be free of the nagging feeling that the Lower East Side is an extremely atypical area and New York City is perhaps the most atypical of American cities. It was even somewhat difficult at first to accept this as a declining area in the general use of the term. This was an area which was originally built with relatively low grade housing many years before 1900. Even today, about 70 per cent of residential units, exclusive of public housing, are in "old-law tenements" (p. 121), which means units built before 1901. Furthermore, Grebler reports (p. 120) that during the last half of the nineteenth century and at the beginning of this century there is ample evidence that the quarters on the Lower East Side were below accepted standards, and (p. 6) that much of the area was considered by the community-at-large to be detrimental to health, safety, and welfare.

The case is made that this area in 1902 had an average rental not much below that for other areas in Manhattan. The normal implication of comparable rents is comparable quality. Grebler explains (p. 121) that the small differential in rents was probably due in part to "the almost compulsory factors which at that time caused immigrants, without knowledge of English and of ways of 'getting around' in a foreign country, to crowd into the area." The clear implication of this is that at the time the study begins in 1900, but for abnormal demand factors, there probably would have already been a wide

rental differential between the Lower East Side and the remainder of Manhattan.

It is evident that since 1900 the area has declined relative to the rest of Manhattan. The question arises: would the relative decline have been so great but for the fact that at the beginning of the period rents were held at a high level by unusual circumstances? Probably too much emphasis has been put upon this as a declining area. The purpose of the analysis would have been equally met—and the contribution certainly no less—if the study had been cast in the framework of market behavior over time in an area which was relatively low grade to begin with. In fact even less attention has been paid to the latter than to the decline of fashionable or upper-class neighborhoods.

After an excellent summary of present thought on the "filtering down" process, Grebler suggests that probably the best measure of "filtering" is the change in position of a dwelling unit or group of dwelling units in the distribution of rents and prices in the community as a whole. Unquestionably this measurement is a very useful one in analyses of market behavior. It does not appear, however, to measure the phenomenon that economists for a long while have described as the "filtering down" process, as defined for example, by Ratcliff (cited by Grebler, p. 56). It is difficult to see how the concept stated by Ratcliff, and generally accepted, can be subjected to measurement without data on both the incomes of occupants and the rentals or prices of the units. The reader is somewhat puzzled (pp. 61, 62) as to whether Grebler disagrees with the generally accepted concept of "filtration" or concludes pragmatically that the empirical data necessary to its testing cannot be assembled. He does not in any event make the case that his is a better or more rational measurement of the same phenomenon.

While much of this review has been used for raising questions about Grebler's book, to have said all the good things about it would have taken infinitely more space. This book is a major contribution and marks a significant advance in the understanding of both the data required and the concepts involved in analyses of market behavior. It is highly important for Grebler, and the Columbia Institute, to push on.

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Labor

The Impact of the Union. Edited by DAVID MCCORD WRIGHT. (New York: Harcourt, Brace. 1951. Pp. ix, 405. $4.00; text edition, $3.00.)

This volume seems to have developed from a feeling that—to paraphrase a famous remark about generals—labor economics is too important to be left to the labor economists. This reviewer, who tries to be friends with theorists, labor economists, and union officials, can only feel that a dirty trick was played in asking him to write this review; and he hopes that he may have a few friends left after the review has been written and read.

It is undoubtedly true that wage theory cannot be handled most effectively

as a specialty, but must be treated in context as part of a larger apparatus of analysis. A revival of interest in wages by general economic theorists is long overdue and much to be desired. This volume, the most provocative group of essays about wages which has appeared in recent years, suggests that such a revival may be in the making.

The volume includes papers by Professors Clark, Haberler, Knight, Boulding, Chamberlin, Friedman, Samuelson, and Wright. The papers were written for and discussed at a conference sponsored by the American University. Most of the round-table discussion of the papers by the eight participants has been included in the volume, forming about one-third of the total text. The discussion is interesting and helps to bring out the distinctive flavor of each man's thought.

Despite the effort at integration through a conference, the papers do not hang together very well. All make some mention of wages, but this provides only a tenuous link. Knight's paper is a general exposition of the rationale of a competitive economy, with rather brief reference to wage-setting toward the end of the paper. Boulding restates the macro-economic theory of distribution first presented in his *Reconstruction of Economics,* the tenor of which is that events in the labor market may have relatively little to do with aggregate distributive shares. Wright's first paper (there are two in the volume) discusses the dilemma of progress versus security along lines reasonably familiar from his earlier writings. Samuelson reviews and criticizes different types of theorizing about wages which have been important over the past century or so. The merit of the book consists in the brilliance of some of the papers as discrete entities, rather than in any unified reconstruction of wage theory. An integrated treatment is not achieved, and doubtless could not have been achieved in this sort of symposium.

It was probably overambitious to title this volume *The Impact of the Union.* One may well ask, "*Which* impact?" Leaving aside all noneconomic effects, there are many economic consequences of collective bargaining which do not operate via the wage structure—effects on the size and composition of the labor force, allocation of jobs, labor mobility and turnover, worker effort and efficiency, production methods, plant location, marketing and competitive tactics. While the quantitative importance of these effects is difficult to judge, it would not be surprising if wage effects turned out to be a minor part of the total. Nor is it very useful to say that any cost effect of unionism can be assimilated for theoretical purposes to a wage change. This is to work at a level of generality which veils many of the most significant problems. While the contributors to the volume doubtless realize all this, the dominant emphasis on wages conveys an impression that other economic effects are regarded as less important.

Again, what significance can be attached to "*the* union"? This implies a homogeneity in union policies and tactics which does not exist. Even within the United States, national union policies show significant variation at a given time and change over the course of time. Several of the papers imply that everybody knows what a union is and what it does, that theoretical reasoning

can safely start from simple premises which are matters of common knowledge. This is certainly a dubious position, which may lead to waste of theoretical ingenuity in analyzing cases quite remote from reality.

Theorists might reply that labor economists have not yet provided usable generalizations about union behavior and that, in the absence of empirically grounded assumptions, they are forced to proceed as best they can on an intuitive basis. While there is something to this, some of the papers in this volume fail to draw even on the limited knowledge of union behavior which we do have. It would certainly have been a good idea to include a student of trade unionism in the conference. The categories "theorist" and "labor economist," while they do not coincide as closely as one might wish, are not so mutually exclusive as the list of contributors to this volume would suggest.

The traditional (and doubtless healthy) tendency of economists to view with alarm is evident throughout the volume, but something new has been added. Earlier economic critiques of trade unionism emphasized mainly its effects on relative wage rates and on resource allocation. The main fear expressed in this volume, however, is that the *general* level of money wage rates may rise too rapidly as a result of union activities. Cost-induced inflation may produce a chronic tendency toward rising prices accompanied by unemployment, or frequent declines in employment if the monetary authorities attempt to hold prices in check. The mechanisms involved are suggested in Haberler's skilful and lucid analysis.

Friedman suggests that our present fears on this score may be exaggerated, and that the effect of unionism both on wage structure and on the money wage level may be overstated in popular discussion. This is an interesting paper, the only one in the volume which makes frequent reference to empirical evidence. The reviewer is inclined to share Friedman's doubts about the importance of union wage effects in the postwar period. Looking back twenty years from now, it may turn out that present theories of chronic inflation are as lopsided as were our theories of perpetual depression in the late 'thirties. Even economists are too largely creatures of their times.

If the problem does exist, something should presumably be done about it. There is something like a consensus among the authors that not much reliance can be placed on monetary-fiscal restraints on inflation, because of the unwillingness of a democratic government to risk a serious recession. Beyond this, however, there is little in the way of positive prescription. Several contributors appear to hope that union bargaining power can be reduced by restricting unions to a one-company basis, by curbing certain types of union tactic, and so on. These proposals are not pressed very seriously, however, and one suspects that even their proponents doubt their workability. Clark, in a typically statesmanlike paper, explores the possibility of bringing about changes in union behavior, of subordinating short-run conceptions of the union's interest to longer-run definitions of self-interest The fact that none of the authors appears highly optimistic about this or any other approach simply reflects the general state of mind of economists on this matter.

This is certainly a book which deserves to be read by economists generally,

not simply by students of labor. It should have considerable usefulness for graduate students and for the more capable undergraduates. It is bound to provoke dissent, quite possibly indignant dissent, in some quarters. If this leads to more and better work on wage questions, however, the authors will not have labored in vain.

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Population; Social Welfare and Living Standards

Grundriss der Bevölkerungswissenschaft (Demographie). By RODERICH V. UNGERN-STERNBERG and HERMANN SCHUBNELL. (Stuttgart: Piscator-Verlag. 1950. Pp. viii, 602. DM 42.—.)

This book by two experienced German demographers embodies an effort to present a systematic analysis of population questions. It commences with the study of the main features by which a population may be characterized and measured, *e.g.*, households, size of town or city, trade and social position, occupation, age and sex, health and educational attainments. With this groundwork laid, population is studied in its process of renewal through natural change arising out of births and deaths. The subject is covered by establishing some pivotal position which is traced in its various admixtures and correlations. Systematically canvassed in this fashion are available materials on the family and marriage, births and deaths. These materials are then recapitulated in summary of resultant population movements and problems of their measurement and forecasting. By restricting canvass and compressing treatment, rapid disposition is made of the three remaining major topics: migration and processes of spatial population movement, impact of war on population, and population policy and theory.

The work achieves an externally efficient mode of organization of its materials but at the cost of much repetition of subject matter and superficiality of treatment. Repetition is involved since the study of phenomena in their statistically emergent forms (thus birth rate, family size, child mortality, population growth) involves segregated treatment not of different aspects of a process but only of different statistical expressions of it. The analysis remains at the surface level for the most part. Thus in the treatment of population as an aggregate only the most superficial review of statistical findings about population is given. No effort is made to differentiate social systems according to the way in which population is handled. And since the authors regard all aggregative phenomena concerning population as suitable for inclusion within their discipline, the inner connection of these phenomena are lost while attention is concentrated on classification or registration of their outward features.

Even as a handbook the work is deficient. Though most of its bulk is taken up with presenting data on a world basis, both the scope and adequacy of the reporting are limited. Undue prominence is given to recent German developments; little systematic attention is given to population phenomena in non-

European societies; and little use is made—both on the analytic and informational side—of the immense wealth of pertinent monographs and literature outside Germany on the subject. Thus the chapter on internal population movement or mobility fails to take account of the American literature on ecological research and Sorokin's basic monograph on social mobility. Very little in French population literature is cited and of the American literature the authors show acquaintance chiefly with Thompson's text, *Population Problems.* As usual little attention is given to Malthus' positive analysis in the field of demography though the customary homage to his name is paid in the skimpy chapter on the history of population policy. Thus the chapter of the book dealing with the impact of war on population (confined, by the way, chiefly to the statistical registration of the effects of World War I on leading belligerent countries) could have taken as a point of departure Malthus' perceptive analysis directed to the failure of the Napoleonic wars to affect more prominently than it did French population growth (see Bk. II, Ch. 6, of Malthus' *Essay,* later editions).

Though the work is unsuitable as a handbook, it occasionally brings to light some interesting materials. Thus on many relatively obscure questions (such as marriage rates by calendar months, illegitimacy, twins, institutional births, etc.) information not otherwise readily available might be found in this work. American students will be particularly interested in the presentation of German census reports on family size of completed marriages published in Germany during the war and released in a form not readily available in most American libraries. These reports provide "cohort" information on family size in a detail matched by few countries (see pp. 266-77). Comparison of the French and German data on family size in the 'thirties brings to light that differences between countries as to average family size arise from different assortments of family types—the relative weight of the sterile couple, the short 2-3 children family and the long over-4 family—and not from any absolute differences in behavior or modal performance. It is highly likely that the whole modern reduction of the birth rate below reproductive levels reflects the growth in sterile marriages, a slight increase in the rôle of one and two-child families, and the marked diminution in the number of families rearing to adulthood four or more children. But instead of concentrating on this crucial outcome and drawing on more complex and remote levels of experience and causation to explain it, this work like so much of the recent literature in the field obscures fundamental issues by failing to give them the central importance they deserve. It is also worth noting that the discussion of German data on family size does not make a comparative analysis of recent British and American data on the same subject.

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TITLES OF NEW BOOKS

Economic Theory; General Economics

BAUDIN, L. *Manuel d'économique politique.* Vol. 1. (Paris: Lib. Générale de Droit et de Jurisprudence. 1953. Pp. 624.)

This is the seventh edition of this text in principles of economics. The first volume, after a short history of economic thought and after providing definitions of economics, needs, goods, utility, etc., is devoted to the subjects of population, the price mechanism, production, money and credit.

BOULDING, K. E. *The organizational revolution—a study in the ethics of economic organization.* With commentary by Reinhold Niebuhr. Ser. on Ethics and Econ. Life by a study committee of the Federal Council of Churches. (New York: Harper & Bros. 1953. Pp. xxxiv, 286. $3.50.)

BRESCIANI-TURRONI, C. *Corso di economia politica.* Vol. 1, *Teoria generale dei fatti economici.* Rev. ed. (Milan: D. A. Giuffrè. 1953. Pp. 434.)

The second edition of a book originally published in 1949. Additional examples of the quantitative analysis of economic phenomena are provided; and a summary account of the author's investigations on the subject of Pareto's Law, first published some decades ago, is also included.

CHARNES, A., COOPER, W. W., and HENDERSON, A. *An introduction to linear programming.* (New York: John Wiley & Sons. 1953. Pp. ix, 74. $2.50.)

Part 1 is an economic introduction to linear programming and contains sections designed to indicate the nature of linear programming for the nonspecialist, as well as sections for the person interested in concrete applications of the technique. The final sections of this part deal with more advanced materials. Part 2 is devoted to the mathematical theory of linear programming, but is "designed so that a minimum of beginning background mathematics is required."

DATTA, B. *The economics of industrialisation—a study of the basic problems of an underdeveloped economy.* (Calcutta: The World Press. Ltd. 1952. Pp. vi, 291. Rs. 12.8; 21 *s.*)

"The present study examines the impact of the employment and output approach on the economic policy of underdeveloped countries and analyses the cyclical, seasonal and structural problems of underemployment vis-à-vis the prospects and difficulties of industrialisation. Special emphasis has been put on the significance of 'disguised unemployment' as relevant to backward economies, the relative importance of the determinants of employment and income, the relation between the occupation-pattern and resource-utilisation, the problem of the 'surplus agricultural population' and the problem of measuring this surplus under changing resource-utilisation and changing terms of trade."

DEHEM, R. *L'efficacité sociale du système économique.* (Louvain: Institut de Recherches Econ. et Soc. 1952. Pp. 184. $3.)

A review of recent and contemporary welfare economics with primary emphasis upon the theory concerned with optimum use of resources. Because the author finds a contemporary dichotomy between two theories of social welfare—that concerned with optimum use of resources, and the theory of employment—he also includes a treatment of the latter and considers the possibility of an integration of these two aspects of welfare economics in the broader sense.

EUCHEN, W. *Grundsatze der wirtschaftspolitik.* (Bern: Francke. Tubingen: J. C. B. Mohr. 1952. Pp. lx, 396.)

EUGSTER, C. *Thorsten Bunde Veblen, 1857-1929. Darstellung und Deutung amerikanischen institutionellen Denkens aus seinem Werk heraus.* (Zurich: Europa Verlag. 1952. Pp. 116. 116 *s.*, Kart. fr. 6.75.)

FOSSATI, E. *Frammenti di teoria dinamica.* (Trieste: Università di Trieste. 1952. Pp. x, 135.)

FOURASTIÉ, J. *La productivité.* No. 557 of the collection Que sais-je? (Paris: Presses Univ. de France. 1952. Pp. 118. 150 fr.)

The approach of this little book is similar to that of the author's major work cited below.

———. *Le grand espoir du XXe siècle—progrès technique, progrès économique, progrès social.* 3d ed. (Paris: Presses Univ. de France. 1952. Pp. xxviii, 245. 320 fr.)

The object of the author is to show the economic consequences of technical progress. The approach is a very broad one. There are chapters on migration, the evolution of capitalism, unemployment (technological and cyclical), international trade and world equilibrium, and the level of living.

GEMMELL, J. and BALSLEY, H. L. *Principles of economics.* (New York: D. C. Heath. 1953. Pp. xiii, 589. $4.75.)

GRAMPP, W. D. and WEILER, E. T., editors. *Economic policy—readings in political economy.* (Homewood, Ill.: Richard D. Irwin. 1953. Pp. xiii, 393. $3.75.)

A collection of readings on four main areas of economic policy: stability, the control of monopoly power, the distribution of income, and international economic relations. "The book is meant for courses in principles of economics, and it also can be used in courses in government and business, economic problems, and economic planning." The selection of materials appears excellent.

HARROD, R. F. *Economic essays.* (New York: Harcourt, Brace & Co. 1953. Pp. xiii, 301. $4.50.)

HENDERSON, J. S. *Production and consumption—a mathematical reformulation.* Univ. of Alabama stud. no. 7. (University, Ala.: Univ. of Alabama Press. 1952. Pp. 83. $2.)

HIGGS, H. *The Physiocrats—six lectures on the French* Économistes *of the 18th Century.* Reprint of the English ed. of 1897. (New York: The Langland Press. 1952. Pp. x, 158. $3.25.)

HUTCHISON, T. W. *A review of economic doctrines—1870-1929.* (Oxford, Eng.: Clarendon Press. 1953. Pp. xiv, 456. $6.)

LAGLER, E. and MESSNER, J., editors. *Wirtschaftliche Entwicklung und soziale Ordnung.* (Vienna: Verlag Herold. 1952. Pp. 456. $6.)

MARCHAL, A. *La pensée économique en France depuis 1945.* (Paris: Presses Univ. de France. 1953. Pp. vii, 240. 700 fr.)

MACHLUP, F. *The economics of sellers' competition: model analysis of sellers' conduct.* (Baltimore: Johns Hopkins Press. 1952. Pp. xx, 582. $6.50.)

PIGOU, A. C. *Essays in economics.* (New York: St. Martin's Press. 1952. Pp. vii, 241. $3.)

A collection of economic papers, mostly nontechnical in character, that have (with three exceptions) appeared elsewhere since 1939. The three new papers are: "The 'Value' of Different Kinds of Transfer Payment," a short review of *Poverty and the Welfare State,* by Rowntree and Labers; "The Inflationary Gap," written in 1951; and "The Gold and Dollar Reserve," written in the spring of 1952. The volume also includes "Wage Statistics and Wage Policy," the University of London Stamp Memorial lecture, 1949 (published earlier by the Oxford University Press); "One Way of Looking at Economics," printed in *Economica,* January 1951; "Employment Policy," a review of *Full Employment in a Free Society,* by Sir William Beveridge; and numerous shorter essays.

POOL, A. G. *Economists and social policy.* (Leicester: Univ. College, Leicester. 1952. Pp. iii, 20. 1 *s.*)

RÖPER, B. *Die Konkurrenz und ihre Fehlentwicklungen—Untersuchungen über Störungen der Marktwirtschaft.* (Berlin: Duncker & Humblot. 1952. Pp. 243. DM 14,60.)

STARK, W. *Jeremy Bentham's economic writings.* Vol. 1. (New York: Burt Franklin. 1952. Pp. 412.)

TINBERGEN, J. *On the theory of economic policy.* Contributions to Economic Analysis, I., edited by J. Tinbergen, P. J. Verdoorn and H. J. Witteveen. (Amsterdam: North-Holland Pub. Co. 1952. Pp. 80. $1.80.)

WARD, A. D., editor. *Goals of economic life.* Ser. on Ethics and Econ. Life by a study committee of the Federal Council of Churches. (New York: Harper. 1952. Pp. x, 470. $4.)

WILLIAMS, J. H. *Economic stability in a changing world: essays in economic theory and policy.* (New York: Oxford Univ. Press. 1953. Pp. 234. $5.)

John R. Commons, teacher, economist and administrator. Addresses delivered on Oct. 10, 1950, in commemoration of his achievements. (Madison: State Historical Soc. of Wisconsin. 1952. Pp. vii, 23.)

Problèmes économiques contemporains. Colloquia de la chaire Francqui 1951-52. (Liège: Faculté de Droit de l'Université de Liège. 1953. Pp. viii, 150.)

Studi Keynesiani. Prepared by the Instituto di Economia e Finanza della Facoltà Giuridica di Roma. (Milan: A Giuffrè. 1953. Pp. xi, 385. L. 1500.)

Economic History; National Economies; Economic Development

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NOTES

A nominating committee consisting of M. M. Bober, Edward S. Shaw, George W. Stocking, George W. Taylor, Willard L. Thorp and John H. Williams, chairman, has submitted the following slate of nominees for 1954 officers of the American Economic Association:

President: Simon S. Kuznets, University of Pennsylvania

Vice President:

Roy Blough, Director, Department of Economic Affairs, United Nations
William J. Fellner, Yale University
Jacob Marschak, University of Chicago
Arthur Smithies, Harvard University

Executive Committee:

Moses Abramovitz, Stanford University
Evsey D. Domar, John Hopkins
Norman S. Buchanan, University of California
George J. Stigler, Columbia University

Representative of Social Science Research Council:

D. Gale Johnson, University of Chicago

The annual meeting of the Association will be held at the Hotel Statler, Washington, D.C., December 28-30, 1953. The meeting is to be held jointly with allied social science associations. Thus far the Econometric Society, the American Finance Association, the Economic History Association, the American Statistical Association and the Industrial Relations Research Association have indicated their intention of meeting at the same time in Washington.

Deaths

Herbert F. Fraser, professor of economics at Swarthmore College, died February 9, 1952.

Donald J. Hay, instructor in marketing at the University of Illinois, died November 1, 1952.

Frederick E. Lee, of the department of economics, University of Illinois, died September, 1952.

Earl A. Saliers, of Louisiana State University, died December 23, 1953.

Retirements

Clyde B. Aitchison, after serving almost thirty-five years as an Interstate Commerce Commissioner.

John D. Black, as Henry Lee Professor of Economics, effective July, 1953.

Theodore T. Bullock, professor of economics and business law, College of Business Administration, University of Nebraska, February, 1953.

Harry W. Cordell, associate professor of marketing, the Ohio State University, June, 1953.

William H. Spencer, Hobart W. Williams Distinguished Service Professor of Government and Business, effective September, 1953.

Thomas L. Kibler, professor of transportation at the Ohio State University, June, 1953.

Appointments and Resignations

Robert Agnew has been appointed assistant professor of industry in the School of Business Administration, University of Pittsburgh.

A. Anastassiades has been appointed instructor in economics in the School of Business Administration, University of Pittsburgh.

Edward A. Anderson has been appointed instructor in marketing in the Wharton School, University of Pennsylvania.

Arthur G. Auble, of Northwestern University, has been appointed associate professor of business statistics at Claremont Men's College.

Edwin H. Baldridge has been promoted to assistant professor of accounting in the School of Business Administration of the University of Pittsburgh.

Claude D. Baldwin, formerly in the Bureau of the Budget, is now economist in the Office of the Secretary of Defense.

William J. Baumol, of Princeton University, is visiting professor of economics at the University of California, Berkeley, in the spring term.

Edward G. Bennion, director of the General Economic Division of the Standard Oil Company of New Jersey, will be visiting professor of economics at the Massachusetts Institute of Technology in 1953-54.

William Beranek has been appointed lecturer in finance in the School of Business Administration, University of California, Los Angeles.

Hilary R. Beth has been appointed instructor in management in the College of Business Administration, Tulane University.

R. A. Blackwood has been appointed instructor in business administration at Louisiana State University.

Arthur I. Bloomfield, senior economist of the Federal Reserve Bank of New York, has returned from the Associated States of Indochina where he served as economist for a Mutual Security Agency mission.

Robert W. Bradbury is resuming his duties at the University of Florida after a year in foreign service with the Department of State.

Robert B. Buchele has been appointed assistant professor of personnel management and industrial relations at the University of California, Los Angeles.

Arthur F. Burns, of Columbia University, has been appointed to the Council of Economic Advisers to the President.

John M. Clark was appointed special lecturer in the department of economics, Columbia University, upon becoming professor emeritus in February 1953.

Edward Coen, of the London School of Economics, was visiting lecturer at the University of Minnesota in the spring quarter.

Gerhard Colm, chief economist of the National Planning Association, has been in Korea consulting on matters relating to rehabilitation and in India consulting with Indian leaders concerned with national economic planning.

Edward J. Cook has been promoted to assistant professor in the School of Business, Fordham University.

C. H. Donovan has been appointed head of the department of economics in the College of Business Administration of the University of Florida.

Frederick Downs, of the University of Wisconsin, has accepted an appointment as research associate with the University of Kentucky Bureau of Business Research.

James S. Duesenberry has been promoted to associate professor of economics at Harvard University.

James S. Earley, of the University of Wisconsin, has been granted a leave in 1953-54 to accept a Carnegie Foundation grant in connection with the Directed Studies Program at Yale University.

Joseph B. Eisenberg has been appointed instructor in industry in the Wharton School, University of Pennsylvania.

Philip Elkin has been appointed instructor in insurance in the Wharton School, University of Pennsylvania.

Solomon Fabricant has been appointed deputy director of research at the National Bureau of Economic Research.

Gerald J. Feldman has been appointed instructor in industry in the Wharton School, University of Pennsylvania.

George N. Francis has been promoted from assistant professor to associate professor of accounting at Los Angeles State College of Applied Arts and Sciences.

Irwin Friend has been appointed lecturer in finance at the Wharton School, University of Pennsylvania.

Wytze Gorter, of the University of California, Los Angeles, has been awarded a Carnegie

Research Fellowship by the Council on Foreign Relations, at whose New York headquarters he will conduct research in 1953-54.

Daniel H. Gray has been appointed assistant professor of economics at Tufts College for the year 1953-54.

Walter Heim has been appointed assistant professor of accounting in the School of Business Administration, University of Pittsburgh.

Richard M. Heins has been appointed lecturer in insurance in the School of Business Administration, University of California, Los Angeles.

Charles H. Hession has been promoted from assistant professor to associate professor of economics at Brooklyn College.

Werner Z. Hirsch, of the University of California at Berkeley, has been appointed assistant professor of economics at Washington University, St. Louis.

Thomas P. Hogan has been appointed instructor in economics in the School of Business Administration, University of Pittsburgh.

Carl Iversen, of the University of Copenhagen, has been appointed visiting professor of political economy at the Johns Hopkins University for the February 1954 term.

C. Hayden Jamison has been appointed chairman of the department of economics and finance at Beloit College in the absence of Dr. Lewis Severson.

Eugene E. Jennings has been appointed assistant professor of industry at the Wharton School, University of Pennsylvania.

John E. Jeuck has been promoted to professor of marketing and succeeds Garfield V. Cox as dean of the School of Business, University of Chicago.

Michael J. Jucius, now at the University of Turin, Italy, will resume his duties as professor of personnel at the Ohio State University in the autumn quarter.

K. William Kapp has been promoted from associate professor to professor of economics at Brooklyn College.

Charles P. Kindleberger, of the Massachusetts Institute of Technology, will be on leave in 1953-54 to conduct research, using the facilities of the Economic Commission for Europe at Geneva, Switzerland, on a grant from the Merrill Foundation for Advancement of Financial Knowledge.

Walter Kirk has been appointed assistant professor of finance in the School of Business Administration, University of Pittsburgh.

John P. Lewis has been appointed associate professor of business administration in the School of Business, Indiana University.

E. E. Liebhafsky has accepted an appointment as assistant professor of economics at Pennsylvania State College.

Bernard S. Logan has been appointed assistant professor of economics in the School of Business Administration, University of Pittsburgh.

Clarence D. Long, of Johns Hopkins University, has been visiting professor of economics at Columbia University for the spring term.

David L. Lutin, formerly research associate at Massachusetts Institute of Technology, is now an economist in the Office of the Administrator, Housing and Home Finance Agency, Washington, D.C.

Wilfred Malenbaum has joined the staff of the International Studies group at Massachusetts Institute of Technology.

C. Arnold Matthews has returned to the University of Florida after having served with the Armed Forces since 1951.

Dan M. McGill has been appointed associate professor of insurance in the Wharton School, University of Pennsylvania.

Edmund A. Mennis has resumed his duties as security analyst on the research staff of the Wellington Fund in Philadelphia after service in the Military Air Transport Service.

Hermann Meyer-Lindenberg, of Bogota, Colombia, has been appointed visiting professor of economics for the spring term at the University of California, Berkeley.

Raymond F. Mikesell will be on leave from the University of Virginia August to December this year to serve as visiting professor at the National War College.

Ralph A. Nittinger has been appointed instructor in insurance at the Wharton School, University of Pennsylvania.

Thaddeus J. Obal has resigned from the Congressional Joint Committee on the Economic Report to accept a position as economic analyst in the Ford Motor Company.

John F. Orchard has been appointed acting dean of the Graduate School of Business, Columbia University.

Raymond R. Orie has been appointed instructor in accounting in the School of Business Administration, University of Pittsburgh.

Grant M. Osborn has been appointed instructor in insurance in the Wharton School, University of Pennsylvania.

A. R. Oxenfeldt has resigned as associate professor of economics at the City College.

Irving Pfeffer has been appointed instructor in insurance at the Wharton School, University of Pennsylvania.

Karl Polanyi has terminated his services with Columbia University as visiting professor of economics as of February 1953.

Hoyt Price is now second secretary in the American Embassy at Saigon.

John M. Rathmell has been appointed lecturer in marketing at the Wharton School, University of Pennsylvania.

Richard Reed has been appointed instructor in economics at Wheaton College.

George F. Rohrlich has been appointed chief of the Division of Actuarial and Financial Services, Unemployment Insurance Service, Bureau of Employment Security, Department of Labor.

Sam Rosen has been appointed assistant professor of economics at the University of Delaware.

Hilda Rosenbloom has returned to Wellesley College as assistant professor of economics.

James H. Rossell has been promoted to assistant professor of accounting in the School of Business Administration, University of Pittsburgh.

Simon Rottenberg has been appointed visiting assistant professor and research associate at the Research Center in Economic Development and Cultural Change and Industrial Relations Center, University of Chicago.

Eugene Rotwein has been granted a leave of absence from the University of Wisconsin in 1953-54 to accept a Carnegie Foundation grant in connection with the Contemporary Civilization Program at Columbia University.

Francisco R. Saenz, formerly attaché to the Economic Division of the Mexican Embassy in Washington, is now with the foreign department of the Manufacturers Trust Company, New York, N.Y.

David J. Saposs, who has been special adviser to the director of the European Labor Division of the Mutual Security Agency in Paris, has returned to his post as special assistant to the Commissioner of Labor Statistics, Department of Labor.

Richard Scheuch has been promoted to assistant professor of economics at Trinity College.

Morton J. Schussbeim, economist with the Cleveland City Planning Commission, has been visiting lecturer in urban land economics at Western Reserve University in the spring term.

Frederick A. Schwarz has been appointed assistant professor of accounting in the School of Business Administration, University of Pittsburgh.

Carlo Sciffo has been appointed instructor in economics in the School of Business Administration, University of Pittsburgh.

Robert W. Semenow has been promoted to associate professor of real estate in the School of Business Administration, University of Pittsburgh.

Irving A. Sirken, formerly of Williams College, has accepted a position as chief of Industrial Analysis and Program Evaluation, Economic Development Administration, San Juan, Puerto Rico.

George R. Taylor, of Amherst College, has been visiting professor of economics at Columbia University in the spring term.

Reed Tripp, of the University of Wisconsin, has accepted a position with the University of Kentucky Bureau of Business Research.

Randall W. Tucker has been promoted to assistant professor of economics at Trinity College.

Ralph Turvey, of the London School of Economics and Political Science, has been appointed visiting lecturer at the Johns Hopkins University for the October 1953 term.

Lloyd Ulman, of the University of Minnesota, has been awarded a three-year faculty fellowship by the Social Science Research Council.

Arthur R. Upgren has been appointed dean of the Amos Tuck School of Business Administration, Dartmouth College.

Daniel C. Vandermeulen will return to Claremont Men's College in September as associate professor of economics.

Royal S. Van de Woestyne has assumed the dual position of associate dean and dean of students of the School of Business, University of Chicago.

Charles W. Voris has resigned from Washington State College to join the staff of Los Angeles State College of Applied Arts and Sciences, as assistant professor of industrial management.

Louis A. Werbaneth has been appointed instructor in accounting in the School of Business Administration, University of Pittsburgh.

Robert H. Wessel has been promoted to assistant professor of economics at the University of Cincinnati.

Frank N. Willets has been appointed assistant professor of accounting in the School of Business Administration, University of Pittsburgh.

Max A. Woodbury has been appointed associate professor of statistics in the Wharton School, University of Pennsylvania.

William Woodruff, of Nottingham University, Nottingham, England, has accepted an appointment as associate professor of economics at the University of Illinois, effective September 1953.

H. Edward Wrapp has been appointed associate director of the Executive Program in the School of Business, University of Chicago.

Bertram W. Zumeta has been appointed instructor in statistics in the Wharton School, University of Pennsylvania.

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Manuscripts and editorial correspondence relating to the regular quarterly issues of the REVIEW should be addressed to Bernard F. Haley, Managing Editor of THE AMERICAN ECONOMIC REVIEW, Stanford University, Stanford, California.

OTHER DEPARTMENTS

Alvin Saunders Johnson, 1936

No. 38 of a series of past presidents of the Association.

Alvin Johnson

The American Economic Review

VOLUME XLIII SEPTEMBER, 1953 NUMBER FOUR PART I

THE THEORY OF THE OFFSET FACTOR: THE IMPACT OF LABOR DISPUTES UPON COAL PRODUCTION

By C. LAWRENCE CHRISTENSON*

Although bituminous coal mining in the United States contains only a small fraction of the industrial working force, it was responsible for a larger volume of dispute time losses than any other single industry during the two decades beginning in 1930. Moreover, in no other single industry has the possibility of interference with production by labor disputes generated as much showing of public alarm as in the case of bituminous coal.[1] Indeed at times, the power of this industry to develop

* The author is professor of economics at Indiana University.

Even a condensed list of names of the many persons to whom the author is indebted for help in preparation of this article must include: W. H. Young of the Bureau of Mines, Loretta Nolan and Ann Herlihy of the Bureau of Labor Statistics, Walter Slifer of the Bituminous Coal Institute, John L. Lewis and W. A. Boyle of the United Mine Workers, Osmond Harline of the University of Utah and Mrs. Suzanne Clauser, secretary in the Division of Economic Research at Indiana University. Professors Sterling McMillan of Western Reserve University, Clarence Efroymson of Butler University, Roland Davis, Arthur Schweitzer, William Andrews, and George Horwich who are colleagues at Indiana University, have all been good enough to read an original draft of the manuscript and offer helpful criticisms. Responsibility for the article in its final form, of course, must rest with the author.

[1] "Taking man-days idle as a rough measure of the extent of strike activity, the figures indicate that from 1927 to 1932 the man-days idle due to strikes in the coal mining industries averaged 61 per cent of man-days idle in all industries combined; . . . for the period, 1933 to the middle of 1946 . . . the man-days idle due to strikes in the coal industries averaged 27 per cent of the man-days idle in all industries combined." *Economic Power of Labor Organizations; Hearings,* July 21-August 2, 1949, Committee on Banking and Currency, U.S. Senate, 81st Congress (Washington, D.C., 1950), Part I, p. 278. Hereafter cited: *EPLO Hearings.* Warren states that for 1914-49, classification of news accounts of "reported strike situations" shows 23.4 per cent of those in the New York Times and 21 per cent of those in the Los Angeles Times were in coal mines. Railroad and airline strike situations were slightly more numerous (23.9 per cent) in the Los Angeles Times, but apart from that, in no other industry did strikes enlist as much newspaper coverage as in coal mining. Edgar L. Warren, "Thirty-Six Years of National Emergency Strikes," *Indus. Lab. Rel. Rev.,* Oct. 1951, V, 3-15.

political and journalistic heat has seemed greater than its capacity to furnish the basic fuel for the American industrial economy. In the policy controversies of the war and postwar years there was an appreciation of the national importance of the bituminous coal industry, but there was not always an equal recognition of its peculiar economic characteristics. The public press often attributed the operating pattern of the industry to the personalities of particular individuals without much allowance for the physical fact that coal mining is an industry of varying seams, faults, shafts, strips and product volatility. Numerous actions for dealing with strikes in this industry, and indeed in others, were taken; and the cry of "national emergency" whenever a stoppage was threatened became a cliché without much specific meaning.

It is the purpose of this article to develop a theory of the impact of disputes on production particularly applicable to the bituminous coal industry, but which may also outline some features that are of broader significance. Such a theory will not furnish a solution for national emergency strikes, but it may furnish guidance for determining when an emergency is present. In social as in medical science, it might be well for diagnosis to precede surgery. Even complete success in microscopic measurement of the influence of labor disputes upon coal production in the eighteen years, 1933-1950, will do no more than create a "small window that looketh out upon a great world." That window will have more than one opaque pane, and some mullions badly fitted, waiting for other more skillful efforts with better tools and more nearly pure materials to present a clearer view.[2]

I. *The Production and Dispute Record in Bituminous Coal 1933-1950*

A synoptic view of the relation of dispute time losses to the monthly output of coal is presented in the chart entitled "Monthly National Use Production and Disputes Man-Day Losses in Bituminous Coal 1933-50." The continuous line of monthly production calculated from the "Weekly Coal Reports" of the Bureau of Mines is the calendar-adjusted, total monthly output after the substraction of exports, bunker fuel, and coal used at the mines. These subtractions are based on the assumption, only partially valid, that such items involve commitments for coal that cannot be made available for internal consumption in the national market. The broken line on the chart records the number of man-days lost by labor disputes in the corresponding months as shown

[2] The Division of Economic Research at Indiana University has in process other studies on the economics of the coal industry, and this article is only a portion of a larger research plan.

in the file records of the Bureau of Labor Statistics.[3] Although a little cumbersome, it seems accurate to change the Bureau's terms of "man-days idle" in "work stoppages" to "disputes man-day losses."[4] This is the expression I have chosen to use throughout, except when considering the more general matter of strikes or lockouts without reference to specific monthly measurement, when I shall use the term "disputes time losses."

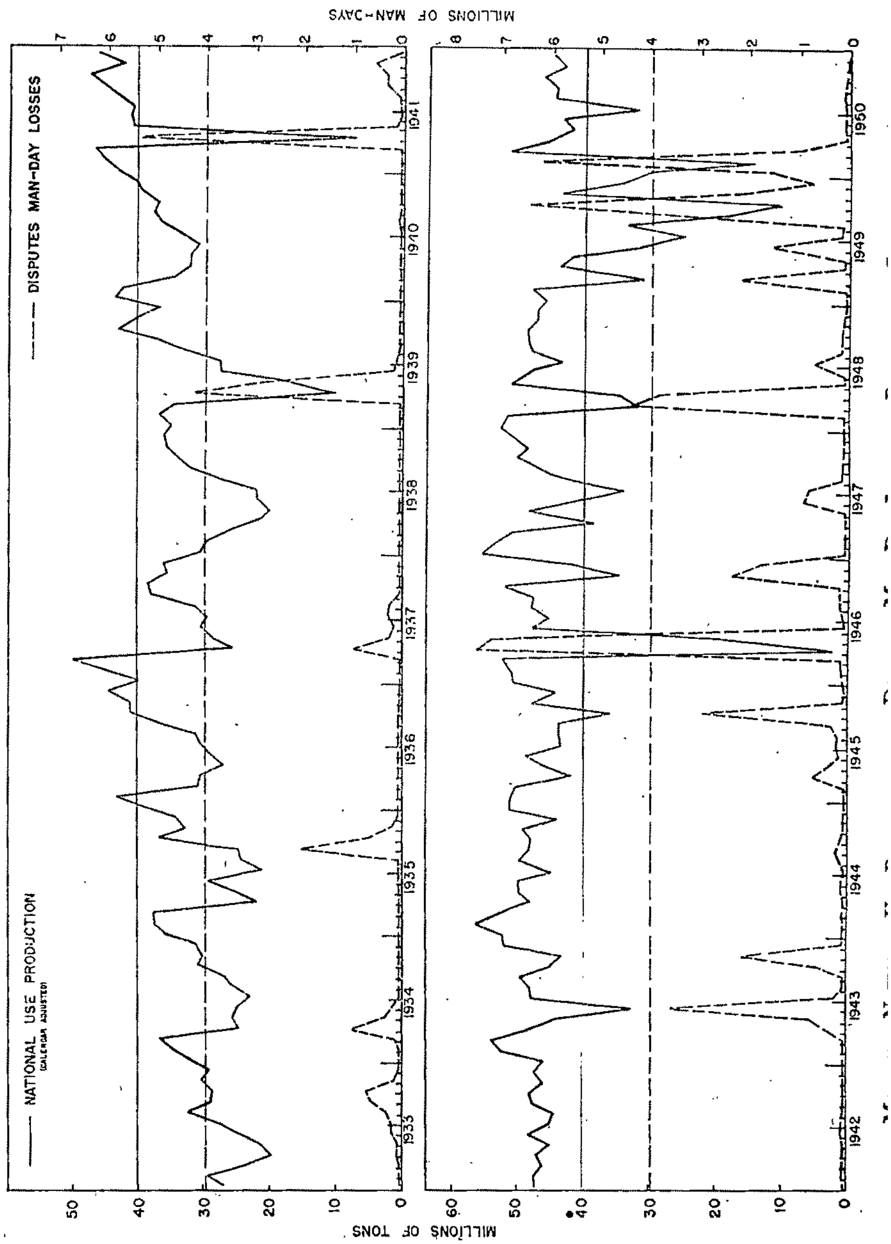
The presentation of the BLS disputes time loss record, without adjustment of any kind, against the background of a reduced and calendar-adjusted figure of total coal production, may seem to exaggerate the force of dispute time losses. However, the substraction of external items results in a smaller rate of tonnage loss per man-day of disputes than may be the actual case. Nevertheless, regarding these external items as firm commitments avoids overstatement in the amount of coal available for national use, and it cannot be said that the nature of any "emergency" has been minimized. In the calculated impact of dispute time losses "emergencies" are taken in full seriousness and perhaps even exaggerated. This is the reason adjustments are made in the production record even though I find no way of making similar modifications in the dispute time loss figures.

The scale for the production line, shown on the left side of the chart, is in millions of tons; while that for dispute time losses, on the right, is in millions of man-days. For convenient reading, guide lines have been drawn at the 40 million-ton monthly production level and at the level of four million man-day dispute time losses.

[3] The Bureau of Labor Statistics records "all known stoppages arising out of labor management disputes, involving six or more workers and continuing a full day (or shift), or longer. . . . Figures . . . on 'man-days idle' cover all workers made idle for one shift or longer in establishments directly involved in these stoppages." This statement or one similar will be found in any annual issue of the bulletins entitled "Analysis of Work Stoppages." For example, see Bull. No. 1090, U.S. BLS (Washington, D.C., 1952).

In the years while the Bureau of Mines also made an independent review of strikes in coal mining, the total time lost figures were usually somewhat larger than those reported by the Bureau of Labor Statistics. This may have been due in part to broader coverage but also may have been due to difference in definitions used. The Bureau of Mines classified its figures under the heading "Strikes, Suspensions and Lockouts," which might well include some stoppages omitted by BLS as not being "suspensions due to disputes." A memorandum of the Bureau of Labor Statistics recognized the difference in the records of the two agencies thus: in 1942, "the Bureau of Labor Statistics set up a new cooperative arrangement with the Solid Fuels Administration which resulted in the receipt of additional strike leads. When this agency went out of existence, cooperative arrangements were made with other agencies. Prior to this time, undoubtedly many of the small, short strikes were missed."

[4] The expression, work stoppage, seems to me less desirable than disputes loss, since it may apply to secondary stoppages occurring in other establishments and also to the many interruptions of production not directly or indirectly concerned with a labor dispute in spite of the Bureau's warning that this is not so intended.



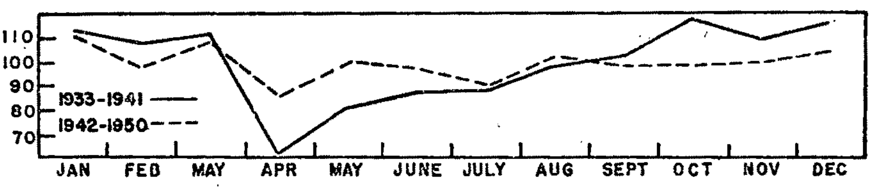
NATIONAL USE PRODUCTION (CALENDAR ADJUSTED)
DISPUTES MAN-DAY LOSSES
MILLIONS OF TONS
MILLIONS OF MAN-DAYS
1933
1934
1935
1936
1937
1938
1939
1940
1941
1942
1943
1944
1945
1946
1947
1948
1949
1950

The chart is divided into two sections, each covering a nine-year period of 108 months. Certain obvious points of the relationship between disputes time losses and production in these two periods are therefore easily compared. For the 1933-1941 period national use production is below the 40 million ton guide line in 87 months and above it for the other 21 months. In 1942-1950, however, there are only 19 months when production falls below the guide line and 89 months when it is considerably above. Indeed in 70 of these 89 months, output is between 40 and 50 million tons and in the other 19 it even passes the 50 million ton level. The annual seasonal variation and general upward trend, broken only by the 1938 recession, is apparent for the 1933-1941 period. In contrast, the disappearance of the rising trend and the reduction of seasonal influences[5] is evident for the later period. By 1942, the production line, having reached a much higher level, tends to remain there except during months of large dispute losses, until it is finally pushed downward by the 1949 postreconversion slump.

In dealing with the dispute record in the bituminous coal industry it is both sensible and convenient to take the figure of 300,000 monthly man-day losses as a bench mark to separate minor from major dispute months. I use the term "minor dispute month" to mean a month with dispute man-day losses of 300,000 or less, and the expression "major dispute month" to refer to those months with working time losses in excess of such amounts. For an industry with approximately 400,000 production workers this bench mark would be equivalent to a loss of one day of working time for 75 per cent of the force. Similarly, the figure of four million man-day losses which I have used for the guide line in the chart might represent a ten-day monthly time loss for an entire working force of 400,000 employees.[6]

While the number of months with less than 300,000 dispute man-day losses are not classified in detail, it should be stated that there was no

[5] Comparative indexes of seasonal variation appear as follows:



Seasonal Indices of U.S. Bituminous Coal Production
(Monthly Averages as Percent of Annual)

[6] Calculations based on the average monthly number of production workers attached to bituminous coal mining for each year as reported in the BLS Handbook of Labor Statistics (Washington, D.C., 1950), give annual average figures of 416,000 for 1933-1941 and 393,000 for the later nine-year period.

month during the eighteen years without some time loss from disputes. Partly because of the scale used, the chart line, representing minor dispute losses in certain months in 1933-1941, has to run so close to the base as to be almost imperceptible. Also, some small local disputes may have escaped recording in the earlier years.

The chart easily reveals that major dispute months involved time losses larger in magnitude and more numerous in 1942-1950 than in the nine earlier years. An exact count shows that 1942-1950 contained 27 such months, while there were only 14 in the 1933-1941 period. If these major dispute months are broken down into smaller classifications, only four months prior to 1942 involved dispute time losses of a million man-days or more, while there were 17 such months during the nine years following. The record for only two months during 1933-1941 crosses the four million man-day guide line on the chart, while that for five different months passed this mark after 1942.

The division of the eighteen-year record into two periods of nine years each has been based on several considerations. Not the least of these has been the special significance of the year 1941 as the demarcation line for the first period. From the ashes of the 'twenties, under the impetus of the NRA in 1933, the phoenix of unionism in the coal industry began its resurgence. It reached maturity only at the close of 1941. Then it was that the formal inclusion of the industrial-consumer owned mines (*i.e.*, "captive mines") within the orbit of unionism made the recognition of the United Mine Workers of America (hereafter U.M.W.) extend through about 80 per cent of the industry.[7]

[7] The 80 per cent figure is an approximation of the actual facts. The campaigns of the rival Progressive Mine Workers of America in West Virginia, Pennsylvania, Kentucky, and Kansas had come to unsuccessful ends by 1940, and that organization was then confined to representation in the Illinois mines. Its membership by 1950 was between eight and ten thousand in mines producing about 25 per cent of the Illinois tonnage. For the only comprehensive study of the P.M.W. see Harriet D. Hudson, *The Progressive Mine Workers of America: A Study in Rival Unionism* (University of Illinois Bull. Ser. No. 73, Urbana, 1952). Since the 1947 withdrawal of the U.M.W. from the A.F. of L., membership figures have not been published, but the Welfare and Retirement payments of 128 million dollars in 1951 represent payments on 82.5 per cent of the tonnage produced in that year, while payments for the 12 months ending July 1, 1949, covered 76 per cent of the tonnage. Important coal producing states from which welfare payments covered considerably less than 60 per cent of state tonnage were Kentucky and West Virginia. The possibility of both late and advance payments prevents such calculations from being precise measurements. See *U.S. News and World Report*, May 2, 1952, p. 59; *Chronology; U.M.W. Welfare and Retirement Fund*, (U.M.W., Washington, D.C., 1950), p. 14. Also, see Testimony of Josephine Roche, in *EPLO Hearings*, Part I, p. 194 and pp. 141, 143, 146, and 518. Daugherty and Parrish probably overstate the membership of U.M.W. as being 90 per cent of the bituminous mine workers in 1951. However, the calculation on the basis of current tonnage covered by welfare payments is not parallel with estimates of union membership in the working force. Many men may retain union membership after retirement, or when working only part-time, and, moveover, output per

However, the complete acceptance of unionism in the consumer-owned mines since 1941 has tended to cover up the fact that significant portions of the commercial branch of the industry have remained outside the unionized framework. Probably, if the commercially sold production is taken alone, only about 75 per cent of tonnage has been from mines operating under U.M.W. agreements.

It is sometimes claimed, and it is certainly implied in the declarations of policy of both the National Labor Relations Act and of its successor, the Labor Management Relations Act, that when organizational strife in the establishment of unionism is over, losses in working time due to labor disputes may be expected to decrease. For the bituminous coal industry, at least, such claims are not well founded. The simple review of the actual record shows clearly that dispute time losses since 1942 have been vastly greater than in the earlier years of ascendancy of unionism before its widespread acceptance had been re-established.

This finding, significant though it may be, is not the most striking revelation growing out of the review of the production and dispute record. The truly surprising discovery, for purposes of this study, is the demonstrated fact that the greater dispute time losses after 1942 were accompanied by output from the coal mines exceeding that of all previous records. No other nine-year period in the entire history of coal mining in the United States can match the record of 1942-1950 either for dispute time losses or for production. It is this phenomenon which demands explanation.

II. *The Theory of the Offset Factor*

Two Forms of Impacts of Dispute Time Losses on Production

A layman's view of the relation of production to dispute time losses might be: "Coal miners, when they work, produce coal don't they? Then when they walk out or are locked out, they don't mine coal and therefore output falls by the amount that would have been produced if the men had remained at work." It seems apparent that this simple view, if not entirely wrong, is still considerably less than half the truth.

An explanation of the actual record of the relation between disputes time losses and production requires the development of a new theory which I call "the theory of the offset factor."[8] The offset factor is

man in some of the nonunion mines may be higher than in unionized mines. See Carroll R. Daugherty and John B. Parrish, *The Labor Problems of American Society* (Boston, 1952), p. 570.

[8] Awareness of need for such a theory is indicated in the writings of others. Thus George Taylor writes concerning the BLS disputes figures, "These data, which constitute a census

merely a label for those forces which mitigate the impact of dispute time loses upon production. The identification of these forces is difficult and needs development in detail. It is assumed that labor disputes represent real differences between representatives of employees and management officials which are, in part, causal forces that influence the volume of production. This is certainly implicit in the layman's view of disputes and is also the view expressed in many of the Congressional proposals for dealing with national emergency strikes. At present, I do not challenge this assumption, although it probably is not universally valid. A publicly declared labor dispute might be a result of a particular production level as well as the cause of it. Moreover, such a dispute may be less of a contest between management and labor than it is an expression of different views of industry control.

Whether labor disputes generate production changes or are themselves generated by the level of production, they are in any case immediate short-run phenomena. A mine while closed down during a labor dispute does not produce coal. This much is about all there is in the layman's view that is obviously correct. But the importance of this observation lies in its emphasis on the immediacy of the relation between a dispute and output, not in its usefulness for measurement of the full strength of the impact of the dispute.

The full effect of dispute time losses on production volume is by no means simple, nor is it uniform for all industries. I do not pretend to identify all the different pertinent industrial circumstances, but a few that seem generally important may be mentioned. In considering the impact of any dispute time loss it is necessary to observe the character of the product as well as the nature of the production process, and more specifically the importance of labor to current output. Coal is a source of industrial power, but so too is electricity generated by hydro-electric plants. Conceivably, however, a labor dispute which resulted in the walk-out of the entire mechanical force of a hydro-electric station, for say, twenty-four hours, might make no difference whatever in the

of strikes, are frequently presumed to be an adequate index of the severity of costs of strikes in their impact on national output, production, or the effective prosecution of the war. No such presumption is justified. Many strikes result in no net loss in working time or production since hours that would otherwise have been idle are worked. Other stoppages in the critical component may have tremendous effects upon total production. It is simply impossible to indicate the effect of industrial disputes from simple enumeration." "Labor's No-Strike Pledge—A Statistical Review," *Yearbook of American Labor* (New York, 1945), p. 140. Milton Friedman states suggestively: "In many cases, so to speak, unions are simply thermometers registering heat rather than furnaces producing the heat." In D. M. Wright, *The Impact of the Union* (New York, 1951), p. 222, also p. 205. For an argument which even more closely parallels that developed here see Lloyd G. Reynolds, *Labor Economics and Labor Relations* (New York, 1949), p. 307. My own study shows that some points mentioned by Reynolds are of much broader applicability than he allows.

amount of electricity delivered. Similarly an oil refinery might continue regular production for a day with only a skeleton crew. On the other hand, readers who want today's news will not get it by the delivery of a paper which is printed next month; nor will an audience that wants entertainment tonight get it if the cast and stage crew walk out with the promise of returning next week.

The bituminous coal mining industry is not a continuous process industry that might operate automatically without any labor for a short time; nor in the major dispute months, are we confronted with temporarily endurable defection of small portions of a labor force. Neither, however, is coal a commodity that is consumed concomitantly with its production so that any temporary stoppage means a complete loss of the service that might have been forthcoming had there been no dispute. Measured by dollar cost of production, bituminous coal is from 50 to 70 per cent labor; and major time losses are almost certainly associated with the termination date of national or district agreements. They usually apply to the entire productive labor force of the firms involved in the dispute. The illustrations mentioned are theoretical possibilities, but their importance here is simply to make the character of the coal industry stand out in sharp relief. Viewed from the side of the production process, dispute time losses in the coal industry present a real possibility of bringing about reduction in total output.[9]

The impact of any dispute that results in reducing total output below levels that would have prevailed had that dispute not occurred I choose to label "detractive." However, this type of impact is not the only kind associated with dispute time losses.

Approaching the question from the demand side, we may consider a situation when the total demand for coal is decreasing. During such a period representing a downswing in the business cycle, coal output will be falling due to a shrinkage in consumer demand requirements. A dispute time loss arising under these circumstances, if spread broadly enough over a large portion of the industry, may affect the location of the output shrinkage even though it does not change its absolute quantity. It is this power to influence the location of an already shrinking output that I call the "distributive" impact of dispute time losses.

This distributive impact is often overlooked because of the mistaken assumption that labor union action tends to be limited only to efforts to

[9] Preliminary examination of materials suggests that coal may be considered as having a relatively inelastic demand schedule not subject to rapid shifts in position. There are, however, some notable qualifications, as in the case of certain steam electric generating plants that maintain auxiliary oil burning equipment which may be brought into use quickly if there is distress selling of fuel oil. Over longer periods there are still broader possibilities of reliance upon substitutes. For the present these long-run forces are neglected.

improve current working conditions for members as individuals. But in a period of shrinking demand, falling production is almost certain to bring increasing unemployment, especially in an industry where wages bulk large in total costs. The simple fact that employment and production are two different sides of the same coin must therefore mean that any union action designed to influence the manner in which unemployment is to spread must also influence the distribution of the volume of production.

This classification of dispute impacts recognizes that even the potential effect of dispute time losses on production may vary depending upon the conditions of demand existing when the dispute occurs. The detractive impact, which is the kind that seems to be most common in the layman's mind, may not exist at all under conditions of falling demand, although a distributive impact may still be present.

The clearest illustration of the distributive impact in the coal industry occurs during seasonal recessions. Such timing was almost automatic and regular in the coal industry during the period 1933-1941, because of the practice of having union wage agreements terminate in April. Speaking broadly, the effect of this practice is to synchronize the possibility of prolonged stoppages over failure to reach agreement with normally anticipated seasonal reduction in demand. A generally supported walkout would merely spread the adjustment to shrinking demand throughout all mines. Such a dispute, however, may be charged with contributing to an aggregate production shrinkage even though the apparent detractive impact certainly would be spurious.

This situation presents a serious dilemma from which I have found no adjustment of the statistical record that provides a satisfactory solution. Especially in so far as the bituminous coal industry is concerned, it cannot be said with confidence that dispute time losses are strictly independent forces divorced from cyclical and seasonal variations.[10] Whether the dispute time losses have any real distributive impact under these circumstances, depends upon how extensively the dispute spreads through the industry.

[10] Customarily it seems to be assumed that strikes are irregular factors in time series. Thus one well-known text in economic statistics discussing adjustments for various movements in time series, reports: "The scheme most commonly employed for this purpose involves a fourfold classification attributing variations in time series to changes in the seasons, to the business cycle, to secular growth or decline, and to numerous irregular influences such as wars, droughts, and *strikes*." (Italics mine.) D. W. Paden and E. F. Lindquist, *Statistics for Economics and Business* (New York, 1951), p. 170. Unfortunately for simplicity of statistical procedure, strikes in the coal industry cannot be treated as merely "irregular influences." Even in a broader economic setting than a single industry the careful study by Rees suggests that strikes may be a part of business cycle movements rather than "irregular influences." Albert Rees, "Industrial Conflict and Business Fluctuations," *Jour. Pol. Econ.*, Oct., 1952, LX, 371-82.

Both the detractive and distributive impact of dispute time losses are positive elements that threaten to influence the character of production. This does not mean, however, that the threatened influence is necessarily disastrous for aggregate output or that distribution of output among firms is actually modified. Both such impacts may be mitigated, perhaps even absorbed completely, through the operation of the offset factor. Its operation may vary considerably, and these variations will be examined after the general nature of the offset factor has been set forth.

The Offset Factor: Its Two Forms

The offset factor may appear in either of two forms, and both are potential neutralizers of the detractive impact of disputes. One of these I call the "current-transfer offset factor" and the other the "time-shift offset factor." The basic characteristic of the current-transfer offset factor in the coal industry is the ability to move orders from mines where coal production has been impaired by a dispute, to mines not so affected. Such movement may be by coal consumers placing orders elsewhere, by operators of multiple units shifting production from one mine to another, by sales agents handling business of many different mines, or indeed, by operators of closed mines purchasing coal elsewhere at such times to fill orders for regular customers.[11]

The time-shift offset factor does not mean any transfer of orders but is simply the power of mines, whether directly affected by a dispute or not, to move production from one operating period to another. This time-shift offset factor itself has two aspects, one of which I call "anticipatory" and the other "retroactive."

The time-shift is anticipatory when the advance prospect of a dispute is clear enough to encourage increased output *before* the stoppage occurs. There is a serious oversight in treating major disputes in the coal industry, and perhaps in other industries also, as if they were comparable to the unannounced spontaneous eruption of a volcano. Rarely is this true. Termination dates of union agreements are public knowledge long before the event, and many major dispute time losses occur under circumstances that facilitate use of the anticipatory feature of the time-shift offset factor.

The retroactive aspect of the time-shift offset appears after the event of the dispute. It provides the possibility of increased output above the levels that would have prevailed for that period had there been no dispute. It functions if there was no anticipatory action or when antici-

[11] Actual cases of this procedure have been found among Indiana mines. Some union mines in Indiana have brought coal from nonunion mines in Kentucky to fill orders during major disputes. Sale through agents is a widespread practice in the industry.

patory action was inadequate to reduce the detractive impact of the dispute to zero.

An essential element of the offset factor, both in its current-transfer and time-shift form, is the presence of unused productive capacity. No offset factor of either type is possible unless output has the potentiality of being expanded significantly and rapidly. But the degree of unused capacity may vary not only through time but also currently from one portion of the industry to another, especially so if productivity is not uniform. Hence, the power of the offset factor to mitigate the impact of a particular dispute depends not only on the time at which the dispute takes place but also upon the geographical location of the part of the industry in which it occurs.

The Current-Transfer Offset Factor

While the element of unused capacity is necessary for both forms of the offset factor, it is not a sufficient condition for creation of the current-transfer. For the current-transfer to be operative it is important that the industry in which a dispute occurs be one composed of a large number of independent firms producing a homogeneous commodity, or at least one where product differentiation is not so pronounced as to seriously limit substitution. It is necessary that some firms be outside the scope of the dispute and also be effective sellers in the same market area served by those firms where the stoppage in production is taking place.

These basic requirements for the current-transfer offset factor are approximated in the bituminous coal industry. Active production of coal takes place in widely scattered mines in thirty different states. While coal is not all of uniform quality, substantial homogeneity is obtained through industrial purchasing on the basis of BTU content rather than by reference to brand names. Most important of all is the fact that these dispersed mines furnish great flexibility in output, and not even the most widely spread dispute has ever encompassed all firms in the industry.

There are, however, two obstacles to prevent the coal industry from fully meeting the basic requirements for a perfect current-transfer offset factor. One of these is noticeable product differentiation for the coking quality coals, combined with nearly complete ownership of these coals by the industrial consumers. Both the large difference in quality and special ownership serve to remove these coals, which represent perhaps 16 to 19 per cent of total output, from the commercial market. The net effect is that the current-transfer offset factor can contribute little to reduce the impact of dispute time losses occurring within these "captive" mines, and neither does it gain any support from

the operation of these mines when the commercial mines are closed down. On the other hand, the power of current-transfer in the commercial branch of the industry cannot be fully allowed for in our measurements. Statistical materials do not permit the monthly production and disputes time records to be split into units dealing with commercial and consumer-owned mines separately. Failure to do so tends to give a distorted impression of the extent of unionism. Thus, it also contributes to a misleading underestimate of the full power of current-transfer in the commercial branch of the industry.

The other important obstacle is concerned with mine location and transportation problems. Even if all coals other than the special coking coals entered in the commercial market and were uniform in character (which they are not), thousands of mines in the many states are not all equally available to consumers everywhere. Thus, the presence of large unused capacity in the bituminous mines of Utah permits no possibility of a current-transfer offset to mitigate the impact on production of a dispute which closes down all the mines in the great industrial consuming centers east of the Mississippi. The cost of shipment of a bulky commodity fixes the limits of the area within which the operation of the current-transfer offset factor can take place. But the determination of the boundaries of the market area by transport costs is not peculiar to the coal industry. What does seem to be special for this industry is that the available transportation facilities tend to be exhausted long before the limits of productive capacity to mine coal are reached. Hence the presence of unused capacity for the coal industry itself may be less important for the operation of the offset factor (in both forms) than the availability of rolling stock in the railroads upon which the industry must rely for delivery of about 80 per cent of its output. For the current-transfer offset factor to operate fully, not only must there be unfilled rail cars at the right time, but they must be available to serve the mines that are not affected by the dispute.

Even if the productivity of all the mines were uniform, location of the area of a dispute might still be important in determining the power of the current-transfer offset. Widening the extent of unionism makes disputes arising over failure to agree upon renewal of contracts spread over a larger area. Hence, it also tends to weaken the force of the offset factor in this form.

The Time-Shift Offset Factor

Number of firms, homogeneity of product, or extent of the dispute area are of much less importance for the operation of the time-shift offset factor. Indeed this form of offset may mitigate the impact of a

dispute which brings about closing of *all* coal mines for a short period. Just as in the case of current-transfer, its power would be limited by the degree of unused capacity in the industry. Here too the decisive element may not be the capacity to mine more coal but the availability of additional transportation facilities.[12] During a localized dispute the time-shift offset factor might operate as a supplement to current-transfer, but its strength does not rest on the location of a particular dispute. What counts most in determining the real power of the time-shift is the *duration* of the dispute. This is because of the fact that the longer the dispute lasts, the less significant becomes a given margin of unused capacity existing before the beginning of the dispute. The power of the anticipatory feature of the time-shift offset is thereby reduced.

However, given a dispute of short duration, the anticipatory feature of the time-shift can go into effect either regionally or on an even broader scale providing there is unused capacity and reason to believe that a stoppage of production may be imminent. The time-shift offset can hardly act concurrently with the current-transfer but it may serve as an important supplement.

At the other end, the supplemental strength of the retroactive feature of the time-shift offset factor is derived from the ability of consumers to wait upon production. At least since 1947 in the American economy generally, this ability probably has been much greater than assumed during the heated controversies associated with major disputes.[13] For

[12] Writing in 1923, Tryon and Wing made this significant statement, which is still valid and important: "If the mines are generally at work, the limiting factor becomes transportation, and further increase in price encourages the opening of thousands of wagon mines which, under the law, can demand transportation and whose activities so dilute the available car supply handled by the carriers." David L. Wing and F. G. Tryon, "Fluctuations in Coal Production," Ch. XV in Persons, et al., *The Problem of Business Forecasting* (Boston, 1923), p. 200.

Ten days prior to a U.M.W. announced closing of mines, the author had an interview with an executive of one of the large coal companies. The interview was interrupted many times while this official negotiated by telephone with industrial buyers for advance orders and with railroad officials for additional freight cars. There was no question about ability to mine the coal and hardly any as to getting advance orders; it was shortage of shipping facilities that appeared as the real capacity limitation. While this official apologized for the interruptions, he might well have charged the author a fee for carrying on an excellent laboratory demonstration of the time-shift offset factor in actual operation.

[13] The retroactive feature of the time-shift offset factor is real for other industries besides coal. Thus, consider the following statement from the *Monthly Letter on Economic Conditions and Government Finance of the National City Bank of New York:* "The year 1952 has closed with most of the overall measures of business at new highs and with spreading confidence in the outlook. *Some observers doubt that the business indexes would now be as high if there had been no steel strike or catching up period afterward,* but *debate* on *that point* would be *idle.* The important matter is that production organization has again surpassed all previous accomplishments. Not only in dollar values, but in physical terms, which are the measures of welfare, the output of goods and services during the year has set another new record" (Jan. 1953 issue), p. 1, (italics mine). While "debate" may be "idle," critical examination of "that point" is not.

the coal industry some measure of this ability is possible through a study of the records of consumer stock piles. Although this matter is reserved for separate study later, it is mentioned here because it leads to observation of the interrelation between the anticipatory and retroactive features of the time-shift offset factor. It is the building up of excess consumer stocks through the anticipatory feature and their relation to consumer use during the dispute that may determine whether the retroactive time-shift offset factor later comes into operation at all.

Interrelations of the Various Forces

The detractive impact of dispute time losses will reduce current output unless it is attenuated by the current-transfer offset factor. It exerts its full force if a dispute covers an entire industry under conditions of constant or increasing demand for the product. During a period of decreasing demand a dispute may have no effect on total output unless the time loss involved is greater than would have occurred as a result of the shrinking demand requirements taken alone. In that case the impact of the dispute becomes detractive to the extent that output reductions result from this excess time loss, and the remaining impact is distributive. We cannot take the detractive and distributive impacts of disputes as if they were forces always appearing separately; in actual situations they may be combined, and it may be difficult to disentangle them for study.

So, too, the different forms of the offset factor may be blended together, in certain cases. A prospective dispute which threatens to close half of the operating coal mines may encourage a great burst in output among all the mines, which later may be augmented still more within the mines that are not shut down. Such blending, however, does not mean that the current-transfer and time-shift are in fact companionate forces. They are, indeed, more emphatically alternative and complementary to each other. The known presence of a strong current-transfer tends to reduce the importance of the time-shift offset factor. Conversely, the absence of current-transfer increases the significance of time-shift. Just so, a too mild reliance upon the anticipatory feature may increase the use of the retroactive feature after a dispute has been settled.

III. *The Application of the Offset Theory to the Empirical Record*

The Correlation Procedure

If there were no offset factor at work, and also if no other forces than dispute time losses contributed to fluctuations in monthly output, then monthly production would be directly correlated with dispute man-day losses and the coefficient of correlation between them should

be -1.0. This is the mathematical form which the layman's view of the impact of disputes on production would take. If, however, no external forces were at work to produce output variations, but there was nevertheless a strong current-transfer offset factor whenever a dispute occurred, the correlation coefficient would approach zero, its actual value being dependent upon the strength of the current-transfer offset. If the current-transfer offset were only powerful enough to neutralize about half the impact of a dispute, but no more, then the coefficient would calculate to $-.7$ ($r^2 = .49$). Unfortunately, all the other external forces cannot even be identified, to say nothing of being extracted from the statistical record. Hence, such coefficients cannot be relied upon to have these precise meanings.

However, if all other external forces could be identified and extracted, our monthly figures still could not show the full force of the time-shift offset factor even if it was known to be present. Only if the time-shift operates within the month when a dispute occurs will it contribute directly to reducing the correlation calculations. A high correlation coefficient between monthly output and dispute man-day losses is indication of weakness of the current-transfer, but it does not mean that the time-shift offset factor is ineffectual. Rather it may mean that in emphasizing the direct relation between production and time-losses in the major dispute months the effectiveness of the time-shift offset factor which must come in the minor dispute months is subordinated.

If the components of the offset factor have been properly identified, given a situation in which all mines are producing at full capacity when a dispute occurs, or is impending, there is no possibility of immediate short-time expansion. If the dispute involves all mines, it follows that the offset factor in both forms has no power. The immediate impact of disputes time losses upon production is then, and I would say *only then,* direct and complete; the correlation coefficients will be close to -1.0. No allowance would need to be made for the fact that monthly calculations may tend to obscure the anticipatory and retroactive features of the offset factor in this case. However, even close approximation to such cases is rare. In the entire eighteen-year period even the disputes of April-May 1946 only faintly resemble such a situation.

In an attempt to apply the theory of the offset factor to empirical data, the figures for all years are classified in seven groups, each containing years with generally similar economic conditions. This breaks the nine-year record of 1933-1941 into three segments. The first of these, labeled Segment A, consists of the three major dispute years of initial economic revival, 1933, 1934, and 1935; a second segment labeled B is made up of the minor dispute years, 1936, 1938, and 1940;

and finally the third Segment C containing the three major dispute years, 1937, 1939, and 1941, represents a secondary revival group. The 1942-1950 period breaks into four segments. The war years, 1942-1945, contain two major dispute years, 1943 and 1945, making Segment D, and two minor dispute years, 1942 and 1944, making Segment E. The other five years of the postwar period break into two clear segments with major dispute years in each of them. The first of these is the postwar reconversion Segment F, 1946, 1947, and 1948, while Segment G might be called the postreconstruction slump consisting of the two years, 1949 and 1950.

Calculations for 1933-1941

For each of these segments scatter diagrams were made of monthly national use production (Y in millions of tons) in relation to dispute man-day losses (X in thousands of man-days). Regression lines were constructed for each of these diagrams and Table I contains the figures showing the results of these calculations for the major dispute years of the nine-year period, 1933-1941. Results of the next step of determining correlation coefficients[14] between national use production and disputes man-day losses for these same segments of this nine-year period are also presented.

These calculations reveal that a regression line for the period 1933, 1934, and 1935 begins at a lower level (28.6 million tons monthly) and falls at a much less rapid rate (1.28 million tons per million man-day losses) than does a similarly constructed line for the three years, 1937, 1939, and 1941. For the latter segment (C) the regression line begins at 38.9 million tons monthly and falls at a rate of 6.86 million tons per million man-day losses. The correlation computations show clearly that prior to 1936, dispute time losses had a negligible effect on total coal production. The correlation between unadjusted monthly production and dispute time losses of —.10 is so low as to be unimpressive, and when trend and seasonal variation in output are allowed for, the correlation —.17 is still negligible. The one could account for barely one per cent ($r^2 = .01$) of monthly fluctuations in output, and the second, with seasonality allowed for, still would not explain three per cent

[14] Tests to determine whether these correlation coefficients are significantly different from zero have been made. The results showed the correlation coefficients were not significant for Segment A, but were significant for the major dispute Segment C. The actual calculations of $\frac{r}{\sigma r}$ were —.5914 in segment A, r based on national use production and —1.005 (if r was calculated on adjusted production figures). The corresponding calculations for the C Segment give —4.672 when applied to the unadjusted correlations and —4.61 for the other series.

TABLE I.—RELATION OF MONTHLY NATIONAL USE PRODUCTION TO DISPUTE MAN-DAY LOSSES, 1933–1941

	Major Dispute Years		Minor Dispute Years
	A 1933, 34, & 35	C 1937, 39, & 41	B 1936, 38, & 40
Regression Line:[a]			
Begins at Level	28.68	38.99	—
Rate of Fall	1.28	6.86	—
Correlation Coefficients:[b]			
Unadjusted	−.10	−.79	−.16
Adjusted	−.17	−.78	+.49

[a] Figures in millions of tons and rate of fall per million man-days.
[b] Monthly national use production, Y, and dispute time losses, X.

($r^2 = .028$). This suggests that the detractive impact was largely spurious, and that which was real was neutralized by the offset factor in current-transfer form.

Construction of a regression line showing rate of fall in production per million man-day losses for Segment B, the minor dispute years, would be a curiosity without much meaning, as no single month involved as much as a 75,000 man-day loss. Nevertheless, the correlation coefficients were calculated to show how slightly such time losses influenced the total production record. Hardly noticeable if correlated with unadjusted production volume (−.16), with allowance for seasonal and trend factors, the positive correlation coefficient suggests that disputes stimulated increases in output. Of course, the positive correlation coefficient of +.49 is misleading and means merely that if seasonal adjustments are made, dispute time losses of the magnitude involved for these three years were easily absorbed. Speaking broadly and freely, such individual strikes or lockouts may determine *what* mines will *not* produce in a particular week but they cannot bring about increases in total output. They are small enough so that especially in periods of a generally wide margin of unused capacity the current-transfer offset factor will neutralize them completely and output will reach levels established by other forces.

The contrast between Segment C and A is striking. Output has now reached higher levels and the duration as well as magnitude of disputes has been increased (see chart). Our regression line which begins at a production level of 38.9 million tons monthly falls at a rate of 6.86 million tons per million man-days dispute time losses.

The correlation coefficient between monthly production and man-day

losses which is $-.79$ when using unadjusted production figures, falls only slightly (to $-.78$), when output data are adjusted for seasonal and trend forces. This means that for these three years, more than 60 per cent of monthly fluctuations in production ($r^2 = 62.4$, or 60.8 if output is adjusted) were associated with dispute time losses.

Thus, the impact of disputes on production volume in the years of Segment C was considerably more than in earlier years. Although still present, the offset factor, especially in its current-transfer form, has lost some of its power. It would be a mistake, however, to think that the power of the offset factor had disappeared. Actually, the time losses of Segment C, although greater than those for A, never absorbed as much as a full month of working time. The largest of these, in April 1941 5.25 million man-days, were roughly two-thirds the monthly working time of the industry.

Other monthly time losses in Segment C were all of less magnitude. The effort to gain general acceptance of the renewed union agreement in April 1937 involved losses of 978,000 man-days during that month, and each of the four succeeding months also showed dispute time losses between 100,000 and 300,000 man-days. The renewal of agreements two years later associated with the effort to establish general acceptance of the union shop brought time losses of 4.23 million man-days in April and 2.75 million in May.

An increase from one to four million monthly dispute time losses, taken alone, will tend to reduce the power of the offset factor, but such an increase still needs to be examined in relation to other factors. At no time during 1937, 1939 and 1941 could it be said that bituminous coal mining operated at full capacity. Only eleven months during the entire three years showed reported weekly working time above 30 hours, and in none of these did hours per week fully reach the U.M.W. standard of 35. The operation of the current-transfer form of the offset factor is shown concretely by the substantial increase in the relative proportion of output from the partially unionized states of Illinois and Western Kentucky during the major dispute months of 1939 and 1941. Moreover, great increases in output in the months before April in both 1939 and 1941 are indicative of the operation of time-shift on a substantial scale.

The Calculations for 1942-1950

The calculations of the relation of monthly production to dispute time losses for 1942-1950 yield a very different result from that for the earlier nine years. The figures for regression lines showing rate of fall in monthly output per million man-days for these years, along with

correlation coefficients between production and dispute time losses, appear in Table II.

TABLE II.—RELATION OF MONTHLY NATIONAL USE PRODUCTION TO DISPUTE MAN-DAY LOSSES, 1942–1950

	Major Dispute Years			Minor Dispute Years
	D 1943 & 45	F 1946, 47, & 48	G 1949 & 50	E 1942 & 44
Regression Line:[a]				
Begins at Level	48.3	48.7	42.3	—
Rate of Fall	4.45	5.03	4.90	—
Correlation Coefficients:[b]				
Unadjusted	−.84	−.90	−.81	+.32
Adjusted	−.81	−.92	−.82	+.39

[a] Figures in millions of tons and rate of fall per million man-days.
[b] Monthly national use production, Y, and dispute time losses, X.

Here the computed regressions for all the major dispute segments would begin at higher levels and fall at less rapid rates than was true for the major dispute Segment C of 1933-1941. When correlation coefficients are computed,[15] the increased force of the detractive impact of disputes upon production becomes very clear. For the two war years, 1943 and 1945, the correlation coefficient between national use production and monthly dispute time losses is −.84. When volume is adjusted seasonally and for trend, the result is a coefficient of −.81. It seems safe to say that over 65 per cent (r^2 = 68.7, or 64.8 if output is adjusted) of the monthly variation in output is explained by dispute time losses. Again the correlations for the minor dispute years 1942 and 1944 (E), like those for Segment B of the earlier period, do not mean what they seem to say. The positive correlations are indicative of the great productive capacity of the industry in these years with few small dispute losses.

[15] Similar tests to those made for correlations of 1933-1941 confirm the increased significance of the relation of production to dispute time losses for the second nine-year period. For the two major dispute years of the war period (D), a t-test gives a result of $t = -7.262$ when applied to the unadjusted production coefficient and −6.47 when the adjusted production calculation is used. The same test for the two year Segment G gives $t = -6.479$ or −6.72 depending upon whether the correlation is calculated on unadjusted or adjusted production respectively. For the postwar reconversion Segment (F), when 36 months permit the $\frac{r}{\sigma r}$ formula the result is −5.32 and −5.44 on unadjusted and adjusted data.

A still more pronounced relation between production variations and dispute time losses appears for the postwar reconversion years, 1946, 1947, and 1948. Here the correlation coefficient rises to a new height of −.90 or −.92 depending upon whether unadjusted or adjusted output figures are used. This, then, indicates that over 80 per cent of the monthly production variation is accounted for by dispute time losses (r^2 = 81, or 84.6 if output is adjusted). It may also be observed that for the first time, adjustment for seasonality and trend raises rather than lowers the correlation coefficient. This is also true for the two post-reconversion slump years, 1949 and 1950. Our correlation coefficient for these years is −.81 when national use production figures are involved and −.82 when they are adjusted seasonally and for trend. In either case, we have again over two-thirds of monthly variations in output (r^2 = 65.6, or 67.2 if output is adjusted) definitely associated with disputes time losses.

The record then shows that the apparent detractive impact of disputes on production has been substantially greater since 1942 than it was in the earlier years. In part, this is attributed to a weakening of the offset factor, especially in its current-transfer form. It was pointed out earlier that essential components of the offset factor were immediate shiftability of orders and unused capacity. In the application of the theory to post-1941 conditions, therefore, it is relevant to re-emphasize the expanded orbit of unionism and the fact that the major disputes concerning renewal of agreements may encompass about 80 per cent of potential industrial output. Moreover, the expansion of aggregate output of the war and postwar years pushed the actual output levels closer to full capacity.[16]

[16] By request of the Hard Fuels Coordinator, the U.M.W. and the Northern Appalachian Coal Operators Association modified the then (Jan., 1943) existing agreement so as to permit a six-day week with overtime payment for work above 35 hours. See *Proceedings Thirty-Eighth Constitutional Convention of U.M.W.A.* (Washington, D.C., 1944), p. 93. Later, ceiling prices on coal were adjusted upward by O.P.A. (p. 104). It was alleged, however, that although prices were actually advanced to the new ceilings, the six-day week with punitive overtime was rarely followed (p. 144). Operator representatives deny this (p. 146). For present purposes I have not attempted to determine the accuracy of these claims. It is enough now to reveal that the record shows a clear margin of unused capacity during all of 1943. Even in the four major dispute months of May, June, October and November, when extra working time may not have been available in some weeks, full use seems not to have been made of all potential working time in other weeks. Reported average hours worked weekly for the two years, 1942 and 1943, were as follows:

Year	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1942	31.3	31.6	31.5	31.8	32.7	33.2	29.7	32.1	33.5	34.2	34.4	35.7
1943	34.7	37.0	38.6	36.9	<u>35.2</u>	<u>28.4</u>	37.1	40.3	39.4	<u>39.0</u>	<u>28.6</u>	44.6

Major dispute months are underscored.

IV. *Supplemental Examination of 1942-1950 Segments*

The War Years

Since the correlation analysis used thus far is more indicative of changes in the power of the current-transfer form of the offset factor than it is of time-shift, more detailed examination of the individual segments of 1942-1950 is now required. For the war years, 1943 and 1945, disputes were not equal in magnitude to those of 1939 and 1941, although they were greater than those of 1933, 1934, and 1935 (see chart). Since this was so, even an offset factor weaker than in 1939 and 1941 might be sufficient to neutralize the dispute impact. In spite of the fact that higher output volume and expansion of unionism reduced the strength of the current-transfer offset, there are clear indications of its continued vitality. Imperfections of materials prevent a direct observation, but if our vision cannot be clear, neither is it completely obscured.

A glimpse of the forces at work is to be had from the varying character of state production records for 1943, compared with those for 1942, when dispute time losses were of a minor character.

If all coal producing states showed the same rate of increase or decrease in 1943 monthly production compared with the same months of 1942, then the 1942 proportions of total tonnage for each state would not change. On the other hand, a rate of change in one state's tonnage that varies from that of other states indicates a shift in the relative position of that state. Such shifting proportions of state production are too crude to be used as measurements, but they are nevertheless rough indicators of the strength of the offset factor. We know that Virginia, West Virginia, Western Kentucky, and Illinois are at least partially outside the spheres of control of the U.M.W. Hence, if during critical dispute periods, output in these states rises sharply, it suggests that the current-transfer offset factor is operating vigorously. Unfortunately, the state units, except perhaps for Western Kentucky, are all too large to isolate in pure form the areas not covered by major union disputes.

It should be remembered that 1943 was the war year with the prolonged controversy as to portal-to-portal pay. This controversy, while it turned out to be the basis for several interruptions in coal production, was of special importance since it involved the application of the Fair Labor Standards Act to all firms dealing in interstate commerce. Therefore, it could not be strictly insulated either within U.M.W. influence or indeed within the coal industry taken alone.[17]

[17] For details of the scope of the controversy see U. S. Congress, Senate Committee on Judiciary, *Report of the Portal Bill*, S. Rept. No. 37, 80th Cong., 1st Sess. (1947).

The critical months of 1943 were June and November with 3 million and 2.1 million dispute man-day losses respectively; but Apri May and October also were months with over 300,000 man-day losse Examination of the state records reveals that in the major dispu month June 1943, when output for all coal producing states was dow to 71 per cent, Western Kentucky and Illinois produced almost 90 pe cent of their volume for the corresponding month of 1942. Virginia an West Virginia, with smaller numbers of mines outside U.M.W. influ ence, exceeded the national average for all coal producing states onl slightly. The relatively greater volume during this critical month fo Western Kentucky and Illinois is the current-transfer offset factor a work. Moreover, the figures also show the same force at work in the les critical month of November, when smaller time losses contribute t reducing national output to 93.9 per cent, while Illinois and Wester Kentucky more than match the 1942 output level.

More striking than this blurred picture of the current-transfer offse factor is the revelation of the power of the time-shift offset factor i 1943. The U.M.W. 1941 two-year agreement, then in effect, was du to terminate March 31. This was not only common knowledge, bu there was clear warning, as early as February 10, that renewal wa likely to be associated with some dispute since on that date norther and southern operators indicated unwillingness to accept U.M.W Policy Committee proposals. In testifying before the Truman Com mittee on March 26, Mr. Lewis cited the Tennessee Coal and Iro Case to indicate the new importance of the portal-to-portal pay issue.[18]

Under such circumstances the time-shift offset factor came into pla Output in all coal producing states in January 1943 was about com parable with that for 1942, but February and March showed shar increases in volume everywhere. In March 1943 national use pro duction reached the enormous total of 55 million tons, a figure neve reached for any other month in our entire eighteen-year record, excep January 1947.[19] The dramatic appearance of the anticipatory time shift offset factor, therefore, is shown clearly.

Further observation reveals also the appearance of the time-shift in it retroactive form. While the U.M.W. agreement, due to expire Marc 31, was not renewed on time, it was extended for thirty days on Presi dential request, and a second failure to renew resulted in governmen seizure of the mines early in May. April and May, therefore, wer

[18] See *Proceedings Thirty-Eighth Constitutional Convention, U.M.W.* (Washingto D.C., 1944), pp. 93, 95, 97, and 112.

[19] Because of heavy exports in the postwar period, total output exceeded this figure in or month of 1946, four months of 1947 and two months of 1948.

months with no formal disputes, but sporadic walkouts brought 350,000 and 680,000 man-day losses in these months respectively. Time losses of these dimensions were easily neutralized, and 1943 output was about equal to that for 1942 in both months.

Apart from the strength of the offset factor already noticed, both in the current-transfer form and the anticipatory time-shift before June, there were also clear signs of its retroactive form in the months following June. Save for October and November, all the remaining months of the year brought production to levels considerably above those for the preceding year. The remarkable feature of the year 1943 was not that there were five months, each with dispute losses of more than 300,000 man-days; but rather that, in spite of about six per cent shrinkage in production workers, and 7.5 million annual dispute man-day losses compared with about 264,000 in 1942, the total output for the year was 101.4 per cent of that for 1942. It is difficult to read such a record without feeling the power of the offset factor hoisting the coal cars to the tipple!

The other major dispute year of the war, 1945, presents a different pattern; for while the war did not close until late in that year, military industrial production began to fall early in the year. The industrial production index which began at the same level as in 1944, sagged noticeably in April, and continued to do so throughout the rest of the year. It would be expected that such general industrial retrenchment would show itself in reduced coal output, which did prove to be the case.

The coal output shrinkage of 1945 was evident during the entire year until the winter months of November and December, when production rose a little above that for 1944. This falling output meant a widening margin of unused capacity during a year when dispute time losses, although significant, were still not as large as in 1943. The time losses of April and May, 672,000 and 347,000 man-days respectively, were scattered and associated with sporadic outbursts rather than general official stoppages. U.M.W. officials, recommending an extension of work for thirty days after the March 31 agreement termination date, seemed unable to muster enough disciplined support to prevent individual defections.

Such individual defections in a period of sagging demand cannot have even a distributive impact on production. This impact must depend on the breadth of the dispute time loss. For if the margin of unused capacity is becoming wider, and numerous scattered mines are untouched by the defections, these can easily absorb the unfilled orders of the mines that are closed. Hence the current-transfer offset factor effectively prevents a broad distribution of the shrinkage in total pro-

duction requirements and forces concentration on those mines where the sporadic stoppages are occurring. With current-transfer having such power, the time-shift offset factor will hardly operate at all.

Thus April production was well over 40 million tons and was 88 per cent of that for the same month in 1944. But since the operation of the current-transfer offset factor is spread widely under circumstances of such sporadic minor disputes, the results are not strikingly apparent in production records for individual localities. The output in the partially organized centers shows only slightly better positions than in 1944.

The Postwar Reconversion Years—1946, 1947, and 1948

The high correlation between the monthly production record and dispute time losses for these three years calls for some special attention. First, one needs to point out that both in terms of extent and duration the dispute time losses of this segment are of larger magnitude than for any other portion of the eighteen-year period. From this standpoint, no earlier year matched 1946, although the 1948 record was not far below.

The significance of 1946 as the year of transition cannot be overemphasized. While started in 1945, reconversion was far from complete at the close of that year. The prolonged automobile dispute which began in November did not come to an end until March 13, 1946, and heavy industry was not back to full-scale operation until after the first quarter of 1946. This point becomes sharpened with the detail that the April 1946 index of industrial production (1935-1939 = 100) stood at 190 as compared with 336 in April of the preceding year.[20]

It is the magnitude of the 1946 disputes which has the most direct bearing on the operation of the current-transfer offset factor. Reference to the chart shows graphically that April 1946 comes closer to demonstrating the layman's view of the impact of disputes upon production than does any other portion of the eighteen-year record. Dispute time losses of 7.5 million man-days were recorded for April, and national use production fell to 1.6 million tons. In no other month had the bituminous coal industry come so close to a total shutdown. Moreover, curtailment of output seems to have been general, as I find no evidence of any shift in the relative importance of any of the large coal producing states. The current-transfer offset factor, if indeed it was not completely broken down, seems to have been sent to the shop for repair.

However, contrary to the simple view that disputes have a direct

[20] H. M. Douty: "Review of Basic American Labor Conditions," *Labor in Post-War America* (Brooklyn, 1949), p. 110.

impact on production commensurate with the amount of time lost, the current-transfer offset factor seemed to have made a quick recovery. Recorded dispute time lost for the very next month of May was only slightly under (7.2 million man-days) that for April, but national use production came back to a level just under 19 million tons. Moreover, this rapid return to higher level output occurred with another shift in the relative importance of the different coal producing areas; this time it was Ohio, Illinois, and West Virginia that seemed to share the honors of temporarily improved positions.

Reduction in the power of the current-transfer offset by the large-scale dispute losses in the early part of the year, however, was not the only feature of 1946 that deserves emphasis. Long before the April disputes time losses set in, the work of the anticipatory feature of the time-shift offset factor had come into evidence. Even while major disputes in the heavy industries were reducing the amounts of the then current coal requirements, the output of mined coal was rising sharply. National use production for the first three months of 1946 exceeded any other first quarter except for the year 1944; and even 1944 would have been subordinate to 1946 if the comparison were made on the basis of total production with the huge volume of exports included (see chart). Once this is observed, the theory of the offset factor in the form of time-shift becomes a rational explanation.

Even with a strong anticipatory time-shift factor, however, the dispute time losses of 1946 were of such magnitude as to deplete substantial accumulated reserve stocks. Hence the other feature of the time-shift also becomes of significance. If the larger-scale dispute time losses of April-May impaired output substantially and reduced accumulated inventories, nevertheless the retroactive features of the time-shift offset also provided for a speedy revival. Total output for the summer months, June, July and August, exceeded that for any other year in the entire record, including the bumper year of 1944. Even with greatly expanded export shipment, summer month output for national use was still slightly above that for each of the two preceding years.[21]

[21] From the shipper's point of view the story was told dramatically thus: "The brilliance which characterized the monthly shipments of bituminous coal from Lake Erie during such parts of the season 1946 when the railroads and vessels were amply supplied with cargo coal can best be evaluated not through the accomplishments of the preceding season, but by comparison with the trade of 1944 when splendid sailing conditions, precision of dispatch and a larger fleet of vessels conspired to bring about the all-time record movement of approximately 53 million tons. . . . Following the sharp recovery to 6½ million tons in June loadings, there ensued an unprecedented flood of coal from mines to lake front docks, thence by vessels to destination. During 123 days of shipping, July 1 to October 31, all former monthly records were broken, and total shipments of 31,758,621 tons constituted 65.82 per cent of the entire season's soft coal shipments." See *Annual Report of the Lake Carrier's Association* (Cleveland, 1946), p. 68.

The records for 1947 and 1948 follow somewhat the same patterns as that of 1946 in attenuated form. Although both can be classified as major dispute years in accordance with our scale, neither of them came even close to matching the 1946 record. In both years, the major dispute months brought some mild shifting of state positions and were preceded by months of expanding total production. The July (6-14) dispute losses in 1948 require some special mention since these were confined to the "captive" mines. Partly because of their limited scope, but more particularly because of the specialized character of the production, we can find no sign of any area shifting that suggests the operation of the current-transfer offset factor at work.

The Post-Reconstruction Slump—1949-1950

The rising trend of coal production of the nine years, 1933-1941, graphically presented, becomes a series of mountain peaks and intervening valleys formed by the seasonal variations, with dispute time losses seeming to blend in with the seasons. The graphic pattern which suggests the mountain climbing course, leads to the long high plateau, which begins in 1942 and continues until 1949 with regularity not found in the earlier period. Indeed, it is almost correct to say that such irregularity as may be found in the post-1941 period is associated with the dispute time losses along with the anticipatory and retroactive compensation for their impact. But the graphic picture of the plateau changes with 1949, as if nature had cut a giant gorge into the landscape. The steep descent of the first part of 1949, broken by the influence of disputes time losses, comes to an end only late in the year, when the pinnacle of winter production has to be crossed before reaching the new plateau level of 1950 (see chart). This language like all impressionism, suggests but does not describe the actual course of the production record.

The continuing slump through all of 1949, shown by the falling index of industrial production and by the rising volume of unemployment, brought with it recession in coal orders.[22] Under such circumstances only the distributive impact can be real, and the apparent detractive impact is bound to be spurious. Falling total industrial demand is certain to bring with it a decline in coal requirements. Understanding of the 1949 record requires a realization that the forces

[22] During the last half of 1948 there were feeble suggestions that recession might be forthcoming. Even though the industrial production index and the volume of employment seemed to be maintained throughout the year, the average weekly working time in manufacturing during the last half of 1948 was slightly under that prevailing for the first half. See Council of Economic Advisers, *The Annual Economic Review* (Washington, D.C., 1950), pp. 157, 169, and 170.

contributing to the decline in coal requirements *preceded* the major dispute time losses and were not created by them.

The year 1949 was not only special in that it was a year of recession, but also in that there were a number of weeks which involved officially directed union reductions in working time which were not classified as disputes losses. Thus the U.M.W.-ordered three-day week, which began the first week in July and extended through August and half of September, was not counted as a labor dispute in the BLS series of disputes man-day losses, but the walkouts beginning September 19 in protest to the stoppage of Welfare and Retirement Fund payments, are included. Technically, the largest dispute man-day losses of the year were those associated with these walkouts, which continued until after a meeting of the U.M.W. policy committee resulted in ordering "the 305,000 soft coal miners east of the Mississippi back to work until November 30, 1949." Failure to reach a new agreement in November brought another general order of a three-day week effective December 5, 1949, but signing of individual agreements with some mines shortly thereafter partially restored the five-day week basis of operation. Dispute time losses of substantial volume continued throughout January and February 1950, until a new National Bituminous Coal Agreement was generally accepted on March 5.[23] Hence, under the special conditions of 1949-1950, the ordinary dispute time losses associated directly with a failure to renew an operating agreement were supplemented with time losses growing out of officially approved reduced weekly work schedules. These supplementary time losses are important, not only for themselves, but as illustrative of points mentioned earlier in our analysis, *i.e.*, that some dispute time losses represent merely another label for reduced operation which would have occurred for other reasons had there been no dispute. The official union orders of a three-day week are a more concrete manifestation of this without the formal pretense of dispute time loss.

The policy, so far as U.M.W. was concerned, was openly stated. The official *U.M.W. Journal* reported:

> . . . divide the orders, share the work program is now a "must" in the soft coal industry. Since the soft coal industry on its own accord, cannot get together and exhibit the business acumen necessary to protect its employees and the business and population of the mining communities, the duty of performing this public service devolves upon the only stabilizing force the industry has ever known, the U.M.W.A.[24]

Still earlier, in announcing the June 13-30 stoppage which was classified

[23] See U.M.W., *Welfare and Retirement Fund: Four Year Summary and Chronology* (Washington, D.C., 1951), pp. 31-43, hereafter cited: *W. & R. Summary*.

[24] *W. & R. Summary*, p. 33.

as a dispute time loss by BLS, President Lewis of the U.M.W. called it:

> . . . a brief stabilizing period of inaction during which cessation of all mining will occur [and stated the reason for this move was that], magnificent production efforts so far this year have resulted in overproduction with consequent economic instability among miners. This period of inaction will emphasize a lack of general stability in the industry and the dangers which will accrue therefrom if current harmful practices are not remedied. It will contribute constructively to the abatement of current economic demoralization; it will not adversely affect the public interest; it will help preserve property values in the industry; and it will help preserve the living standards of the mine workers, their dependents and the communities which depend upon mine workers' incomes.[25]

The view expressed by Mr. Lewis, if correct, may also be extended to other disputes time losses if equivalent working time reduction would take place in any case. It is not a view of the time losses of 1949 that was uniformly accepted. Thus in a National Association of Manufacturers' monograph the disputes time losses of 1949-1950 are regarded as having brought both workers and coal operators immediate serious losses and also as having created later secondary effects on other industries. Unfortunately for this argument, it becomes a little difficult to accept after the admission is made that "Had it not been for the large accumulation of stocks of coal just prior to the beginning of the three-day work week, the coal stoppages of 1949-50 would have brought about an economic crisis."[26]

This admission, if our analysis has been correct, points to the crux of the problem for 1949-1950. The introduction of the three-day week, if extended universally throughout the industry, might have dispersed the force of shrinking demand but could hardly have created a detractive impact on total output. Even in such partially organized pockets as Western Kentucky, the production for all months of 1949 tended to be distinctly under that for 1948, both in months when other areas were little affected by disputes, as well as when the three-day week was in force and large-scale disputes time losses were being sustained. In such a year the current-transfer may exercise only a mild influence in neutralizing the distributive impact of disputes, and the time-shift offset factor is hardly operative at all. If the detractive impact is

[25] *Ibid.*, p. 32.

[26] John G. Gebhart, *The Economic Impact of an Industry Wide Strike: A Case Study of the 1949-50 Coal Strike,* Econ. Policy Div. Ser. No. 27 (New York, National Association of Manufacturers, 1950), p. 10. Bernstein and Lovell in a recent article also seem, in this author's opinion, to misinterpret the 1949 disputes record. See Irving Bernstein and Hugh Lovell, "Are Coal Strikes National Emergencies?" Ind. Lab. Rel. Rev., Apr. 1953, VI, 352-67. Since their article appeared after the present study had been completed, it cannot here be given extended consideration.

spurious, total production tends to take a level which would have prevailed even in the absence of the dispute.

The Concealed Growth of the Strength of the Offset Factor

One additional source of increasing strength in the offset factor must be brought forth into full view. The rate of fall in our regression lines was considerably less for the major dispute year segments of the 1942-1950 period than for Segment C of the earlier nine years. This matter, neglected until other aspects were developed, must now be explained. The real meaning of these differences in the rates of fall per million man-days is that in spite of the larger magnitude of disputes of 1942-1950, their detractive impact was considerably weaker than that of disputes in the earlier nine years. The most important reason for this is to be found in the enhanced power of the offset factor derived from the increased productivity per man-day. Some allowance has already been made for productivity changes. The segments used in calculation of our correlation coefficients were not only designed to group major dispute years into roughly comparable business cycle units, but also to get substantial uniformity in the productivity rates for each segment.[27] However, no effort was made to adjust man-day losses directly for variations in output per man-day.

Compression requires many omissions, but the record has been examined carefully state by state and year by year. Summarized, it shows that increased productivity per man-day since 1941 has been a product of two main forces: great expansion in use of mechanical loading equipment, and an enormous increase in surface mining. In 1935, only 13 per cent of underground production was mechanically loaded, but by 1941 this figure had risen to 41 per cent. Advances during the 1940's were at a slower rate, but by 1950, 68 per cent of deep mined coal was being loaded by machine.[28]

[27] As computed by the Coal Economic Branch of the Bureau of Mines the annual average tonnage productivity per man-day for each year of our segments was as follows:

A	1933	4.78	B	1936	4.62	C	1937	4.69
	1934	4.40		1938	4.89		1939	5.25
	1935	4.50		1940	5.19		1941	5.20

D	1943	5.38	E	1942	5.12	F	1946	6.30	G	1949	6.44
	1945	5.78		1944	5.67		1947	6.42		1950	6.77
							1948	6.26			

[28] Charles James in a careful study concentrating principally on two Pennsylvania counties summarized the development thus: "Mechanical loading, which was of negligible importance before 1930, had risen in importance until, in 1948, roughly seven tons in ten produced underground were loaded wholly or partly by machine.

"The reduction in man-day requirements per ton, which was brought about chiefly by the growth of mechanical loading, permitted operators to keep wage-cost per ton from increasing as sharply as it might have done if wage rates had risen and man-day requirements had not been reduced." *Measuring Productivity in Coal Mining*, Research Rept. No. 13, Industrial Research Dept., University of Pennsylvania (Philadelphia, 1952), p. 68.

Important as has been this increased efficiency underground the still more significant technological change, for this study, is the increase in the proportion of strip-mined coal, from approximately 10 per cent of total tonnage in 1940, to almost 25 per cent in 1950. It is this shift which is the most significant single element accounting for the increase in average annual productivity per man-day. For in a general way it may be said that production per man-day by the strip mining process is from two to four times as great as in underground mining if outputs from underground and strip mines are compared in the same states where both mining methods are in use.

It is not only the proportionate increase in strip mining that we need to examine but the location of that increase. Although coal reserves are widely scattered, about 90 per cent of the total output comes from nine states east of the Mississippi. Among these are Illinois and Indiana, where strip mining got an early start. These two states were responsible for about 60 per cent of the total strip-mined tonnage in 1933 and have continued to place increasing reliance on this method of coal mining ever since. But while both have increased their own percentages of total state production from strip mines, the technological transformation in which they once had the lead has been copied in other states. The transformation began slowly, for as late as 1941 Illinois and Indiana still accounted for about 50 per cent of the strip tonnage. But the force of this technological transformation like a great stream pushing from what seemed to be the headwaters in Illinois and Indiana wound its way into Ohio and Pennsylvania during the 'thirties and then in the next decade meandered on into broader territory to include Kentucky and West Virginia. Thus, in 1950, these six states shared approximately 85 per cent of the national strip tonnage in the following proportions: Illinois and Indiana, 23 per cent; Ohio and Pennsylvania, 40 per cent; Kentucky and West Virginia, about 22 per cent. A review of the shifting of state positions during major dispute periods shows that it was Illinois, Western Kentucky, Ohio, and West Virginia that most frequently showed signs of temporarily improved positions. The fact that these too are areas in which there has been great new growth of strip mining since 1942, and that they are widely separated, has contributed to the strength of the current-transfer offset factor. For the high productivity of strip mining in these areas has increased their ability to neutralize the detractive impact of dispute time losses elsewhere, and their dispersed locations have made their output available to widely scattered consumers. This is one reason why the narrowing of the margin of unused capacity and the broadening of the orbit of unionism that occurred before 1942, did not have their full effect in weakening the power of the current-transfer offset factor.

This regeneration of the current-transfer offset factor occurred because a substantial portion of the new high productivity strip mining of the 1940's was outside the area of the major disputes of that period. To avoid oversimplification it is necessary to observe that it is not true that all strip mining operations have been insulated from the major dispute time losses of 1942-1950. Agreements of the U.M.W. have extended to all strip and underground mines of Indiana, as well as to strip and underground mines responsible for about 75 per cent of Illinois production, and disputes associated with renewals have interrupted mining in these states. But some of the Illinois mines under agreements with P.M.W. are strip mines. Moreover, many of the strip mines of Ohio, Kentucky, and West Virginia have been completely insulated from disputes concerning renewal of national U.M.W. agreements.[29]

But the great contribution which the increased productivity of strip mining has made is to the potency of the time-shift form of the offset factor. Here it has substantial influence throughout both unionized and unorganized areas. It is true, of course, that to the extent this increased productivity has appeared in areas directly affected by large disputes, it has meant that a given number of man-day losses may immediately produce a larger potential shrinkage in tonnage than would have been the case if labor productivity had remained constant. Also, however, this increased productivity has augmented greatly both the anticipatory and retroactive features of the time-shift offset factor. Because of this, even with a somewhat smaller labor force, the coal mines were able to speedily increase production before major dispute time losses were upon them, and return afterwards to higher levels of output more rapidly,[30] in the nine years of 1942-1950 than in the earlier period reviewed. This is the real reason why the calculated rates of fall

[29] Direct communication with the United Mine Workers on the significance of our state calculations resulted in the following statements: "We would concede that your observations, which indicate a significant shift in relative tonnage production of different states during periods of wage disputes, are essentially correct. It is quite true that production is increased in non-union mines during work stoppages. . . . In Ohio and Western Kentucky, there are some unorganized strip mines at the present time, but they do not produce any appreciable tonnage except during cessation of work by the United Mine Workers of America." Letter to the writer from U.M.W. official, dated March 28, 1952.

[30] For special confirmation of this point the author is indebted to Professor Harline of the University of Utah, who writes: "I think that your point that the growth of strip mining has aided the time-shift offset factor is a good one. . . . The simple fact that (underground mines) have to clear the blasted coal away *before* they can get in to make another cut . . . means that it is difficult to speed up the process or store coal underground. . . . In contrast the strip operator can uncover coal for blocks ahead and just let the coal sit there. His ability to do this is limited by the fact that over time the high walls tend to cave. . . . Nevertheless the environment is such that strip mining is still in a better position than underground." Letter dated February 5, 1953.

per million man-day losses after 1952 were distinctly lower than shown by the figures for Segment C of 1933-1941.

V. *The Theory of the Offset Factor in Perspective and The Total Coal Production-Disputes Pattern of 1933-1950*

The theory of the offset factor furnishes us with a clearer understanding of the impact of disputes time losses upon production than has been hitherto available. It gives precise indication of some important elements that must be examined in order to determine the full force of that impact, and so may furnish guidance for policy decisions. By first separating time losses occurring during periods of shrinking demand from those taking place when consumer demand requirements are either maintained or are expanding, the theory makes possible differentiation of the mere distributive impact of time losses from that which is really detractive.

Once the potentiality of a detractive impact has been identified, the different forms of the offset factor may then be examined. This leads to a recognition of the specific conditions that determine the current-transfer and those which make the offset factor take the form of time-shift. While the element of unused capacity is essential for the offset factor in both its forms, the power of current-transfer depends also upon the geographical area to which the dispute time loss may be confined and the degree of product substitution among the individual firms that make up the industry. But though unused capacity is equally essential, it is the duration of disputes that is of greatest supplemental importance in determining the power of the time-shift offset factor. If current-transfer is powerful enough to neutralize the impact of dispute time losses completely, the time-shift form of the offset factor becomes unimportant.

The applicability of the theory of the offset factor to any particular industry depends upon the extent to which these conditions are realized. The bituminous coal industry furnishes a case of close approximation to these essential conditions. Although the theory of the offset factor probably has much broader usefulness than merely to aid in measuring the impact of dispute time losses upon coal production, the possibility of wider application has still to be determined. However, even though the applicability of the theory should prove to be limited to the coal industry alone, its importance would still be substantial; for dispute time losses there easily constitute more than a quarter of the working time lost through labor disputes in American industry as a whole. Even in terms of its applicability to the coal industry, the theory of the offset factor at present merely opens a "little window" on the ground floor, poorly located and too small to furnish a complete view. Beyond our

present horizon lie the answers to important questions of the relation of dispute time losses to miners' wage incomes, to technological changes and employment, to prices for coal, and to coal consumption levels. It will require a larger second-story window to bring these into view.

However, looking at the eighteen-year production-dispute record of the bituminous coal industry from the vantage point of our ground-floor window we have observed a systematic pattern. There was clear evidence that prior to 1937 the impact of dispute time losses on production was easily neutralized by the offset factor in the form of current-transfer, and minor disputes of these years had no noticeable effect. For the later Segment C of our first nine-year period the power of current-transfer was reduced; but nevertheless, in combination with time-shift, it was strong enough to facilitate the continuous upward expansion in coal production.

The reduced power of the offset factor in its current-transfer form manifested itself in the much higher correlation coefficients between production and disputes time losses in the years following 1941. However, the reduction in the power of current-transfer was not as great as these figures suggest. The impossibility of separating the production-dispute record of the "captive" mines from that for the commercial mines tended to magnify the apparent extent of unionism. Hence, the area outside the scope of disputes in the commercial branch of the industry has always been a little larger than appears at first sight. Also great increases in productivity from strip mining, a part of which took place outside the area of major disputes, enhanced the power of current-transfer above that suggested by the calculated figures.

At least some of the large dispute time losses of the 1942-1950 period had no potentially detractive impact upon current coal production at all. This was somewhat true for the time losses of 1945 and certainly for those of 1949. Even the distributive impact of disputes of these years was probably greatly diluted by the regenerated strength which current-transfer derived from the growth of strip mining outside the area of disputes.

It was, however, the great power of the offset factor in its time-shift form which made possible the substantial mitigation of the detractive impact of disputes upon production during 1942-1950. This power grew stronger as current-transfer became more restricted. The potency of time-shift derived largely from the enormous capacity of the coal industry itself was further augmented by increased productivity, partly associated with improved technology underground, but more especially with the rapid development of strip mining. The net effect of the operation of the offset factor in both its forms was to make it possible for U.S. coal production to reach levels considerably above

those for earlier years, even while the amount of dispute time losses also was passing above the highest recorded magnitudes. So great was the output volume that it is extremely doubtful whether, taking the period as a whole, it would have been enhanced at all had there been no dispute time losses whatever. Certainly the claim that dispute time losses in the coal industry produce some kind of an equivalent fall in output simply is not true.

But the impact of disputes on coal production probably is not to be considered analogous to "a widow's cruse in a danaid jar." Rather the great productive capacity of the industry, even when confronted with large dispute time losses, makes it resemble the character of Ovid's miraculous pitcher which Philemon and Baucis found "retained its marvelous quality of being never empty when it was desirable to have it full."

THE BURDEN OF SOVIET TAXATION

By F. D. Holzman*

The principal task faced by Soviet tax authorities is absorption of excess consumer (household) purchasing power generated by the very high rate of non consumption[1] expenditures normally undertaken by the state. The position of the household is particularly central in the Soviet economy because it comprises, with minor exceptions, the entirety of the private sector; since private industry has been virtually nonexistent in the U.S.S.R. for many years, the burden of the state's economic activities must be borne primarily by the household. In this paper an index is presented of changes in the magnitude of this "burden" from 1925/26 until 1950, excluding the war years. Two time series are constructed: (1) consumer money income and (2) taxation (in money) of the consumer; the ratio of (2) to (1) is the average rate of taxation.[2]

The average rate of taxation is one measure of the "burden" of money taxation; this is the definition used by Shirras and Rostas in their study of British taxation.[3] This is the simplest quantitative formulation of the "burden" and is deficient in several respects. First, the extent of the "burden" depends in part on the nature of the public expenditures the taxes are designed to finance. Taxes to finance programs of social security, education, and garbage collection may constitute less of a burden than those used to finance defense, foreign assistance, or long-term investment programs, since the benefits received

* The author, assistant professor of economics at the University of Washington, made this study during the tenure of a fellowship at the Russian Research Center, Harvard University; the assistance of that organization is gratefully acknowledged. He is also indebted to Professor Alexander Gerschenkron, Raymond P. Powell, and Dr. Gregory Grossman for many helpful comments. This paper is part of a larger study of the Soviet tax system which is to be published by the Harvard University Press in 1954.

[1] Nonconsumption is defined here to include all economic activities from which the household receives money income (including transfer payments) but which do not result in output of goods or services for which the household can spend its income. It includes, for example, expenditures on investment in fixed and working capital, military expenditures, state expenditures on health and education, etc.

[2] It should be noted that we include neither income in kind nor taxation in kind explicitly in our series because these cannot be estimated for the period in question with any degree of success (*cf.* fn. 24).

[3] G. F. Shirras and L. Rostas, *The Burden of British Taxation* (New York, 1943), p. 1.

from the former are more immediately perceivable by the taxpayer and to a greater extent may substitute for his own expenditure. Secondly, the psychological impact of a tax depends to a large extent on the form in which the tax is levied; a commodity tax is probably less burdensome than an income tax;[4] and a loan, even though it may never be repaid, may be less burdensome than either of the other two because of the expectation that it may be repaid. Thirdly, the psychological impact of the burden of taxation as we have defined it would depend not only on the average rate of money taxation, but also on the marginal rates and on the absolute levels of income and taxation in *real* terms. That is to say, a nation with a high per capita real income would probably find it less burdensome to pay 20 per cent of its income in the form of taxes than a nation with a low per capita real income. These are but a few of the many factors, economic and institutional, which would cause a divergence between the true psychological burden of taxation and the monetary burden which we will attempt to estimate.

I. *General Methodological Approach*

Measurement of Consumer Money Income

Two independent methods of measuring consumer money income are available to the research worker. The first, and most direct approach, is to add up all sources of income paid out to households over the course of a year. The second approach is to total up household expenditures including changes in savings. Theoretically these two methods should give identical results and a choice made between them should be on grounds of statistical convenience.[5]

Consumer money income will be estimated here from household expenditures. In general it appears more feasible to use this approach, in preference to the income approach, for an extended series of estimates[6] although for certain specific years this may not be the case. The princi-

[4] *Cf.* F. D. Holzman "Commodity and Income Taxation in the Soviet Union," *Jour. Pol. Econ.*, Oct. 1950, LVIII, 425-33.

[5] American economists who have worked on Soviet national income have used both of these approaches. Baran built up his estimates for 1940 for the household from the income side (Paul Baran, "National Income and Product of the U.S.S.R. in 1940," *Rev. Econ. Stat.*, Nov. 1947, XXIX, no. 4); Bergson worked basically from the outlay side in making his estimates for 1937 (Abram Bergson, "Soviet National Income and Product in 1937," (*Quart. Jour. Econ.*, May and August 1950, LXIV, nos. 2, 3); N. Margolin, a Soviet economist, constructs hypothetical estimates of both income and expenditure and discusses, extensively, the methodological problems (N. S. Margolin, *Voprosy balansa denezhnykh dokhodov i raskhody naseleniia* [Problems of the Balance of Receipts and Expenditures of the Population] Moscow, 1940). Although Margolin's estimates are not designated as representing any particular year, they are quite close to figures for 1935.

[6] Gregory Grossman first suggested to me the feasibility of the expenditure approach.

pal stumbling block to the income approach is ambiguity in Soviet data on the total payroll or wagebill of workers and salaried employees.[7] Since the payroll is the largest single receipts item and constitutes about two-thirds of consumer money income, serious doubts would immediately be cast on any income time series based on payroll statistics which did not first explain the observed ambiguities in its magnitude. Retail trade turnover, on the other hand, the largest single expenditure item, is unambiguously available for every prewar year with the exception of 1931. With regard to other receipts and expenditure categories, the difficulties seem to be about equally distributed; the advantage therefore remains with the expenditure approach.

Consumer expenditure categories are considered in greater detail below. The general problems in measuring taxation of the consumer will now be considered.

Defining Taxation of the Household

The approach used in constructing our *principal* series of money taxes on the consumer (Series I to III below) is unorthodox in terms of conventional notions of taxation in capitalist countries; supplementary series (IV to VI) based on more conventional definitions are presented later (Section V).

The unorthodoxy of the present definition stems from the following assumptions:

1. The incidence of all indirect taxes included in the price of all consumers' goods is on the household. This applies to the turnover tax (a sales tax) and to the social insurance markup (a payroll tax).
2. Not only the profits tax paid by state enterprises, but the retained profits of these organizations as well, are considered to be taxes on the consumer. Income taxes paid by the collective farms and other cooperatives are treated similarly.
3. The purchase of government bonds by the population is considered to be a form of taxation.

The first two assumptions are based on the fact, mentioned above, that in the U.S.S.R. there are only two economic sectors, the state and the household; a private industrial (agricultural) sector of consequence no longer exists. Therefore, all taxes included in the price of consumers' goods sold are necessarily paid by the consumer and cannot be shifted backward.[8] Retained profits of state enterprises are no differ-

[7] For discussion of this problem see: A. Bergson, "A Problem in Soviet Statistics," *Rev. Econ. Stat.*, Nov. 1947, XXIX, 234-42; and M. Dobb and H. Schwartz, "Further Appraisals of Russian Economic Statistics," *ibid.*, Feb. 1948, XXX, 34-42.

[8] This is true in an *ex post* sense: all taxes actually paid to the state are paid by the household since there is no other sector to pay them, *i.e.*, the taxes cannot be shifted

ent from profits taxes from the point of view of the consumer: both are markups over explicit costs of production; both constitute financial counterparts to state investment. These two assumptions amount to including in the category, taxes on the household, the total receipts of state enterprises minus their explicit commercial costs. Explicit commercial costs of Soviet enterprises typically consist of payments for labor, raw materials and intermediate products, depreciation, and interest on short-term loans. The following real costs of production are excluded: the return to capital (since the bulk of Soviet investment is financed by interest-free grants from the budget), rent,[9] depletion costs, and depreciation which is typically understated as an explicit cost.[10]

Taxes, as we have defined them implicitly include, therefore, the above elements of factor cost. Our definition of indirect tax would be conceptually much more satisfactory if it were possible to deduct the above-mentioned *implicit* costs from the Soviet markup over commercial cost thereby separating more accurately the factor cost and tax elements in price. This would be difficult to do with any degree of authority since no method has been devised for approximating the value of any of these charges. Baran has assumed that the retained profits of state enterprise represent return to capital;[11] Bergson has assumed that the turnover tax is the only commodity tax and that the remaining markup represents the above-mentioned implicit costs of production.[12] These methods are rejected here because the various elements constituting the markup are arbitrary in size and, in some cases (*e.g.*, retained profits and profits tax) tend to vary in a nonsystematic manner from year to year.[13] The method adopted here provides more consistent results over time. Furthermore, there is not much evidence to indicate that retained profits and other unorthodox tax categories bear a functional relationship to the real economic categories they have been taken to represent. Finally, while the costs of capital, deprecia-

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backward to private individual recipients of profits income. *Ex ante*, the state may attempt to levy higher taxes on commodities than the household is willing to pay in which case the amount of taxes collected will be less than plan; in effect, the consumer will have shifted the taxes backward to the state. However since we deal with *actual* tax collections, the *ex post* concept is the relevant one for our purposes.

[9] *Cf.* Holzman, *op. cit.*, pp. 430-31.

[10] Bergson, "Soviet National Income and Product," p. 415. Understatement is due to calculating depreciation in terms of original cost with no upward adjustment for the effect of inflation on replacement cost; and to the fact that the Soviets typically overestimate the life of their fixed assets.

[11] Baran, *op. cit.*, p. 230.

[12] Bergson, "Soviet National Income and Product," p. 434.

[13] *Cf.* Table II for profits figures.

tion (part), depletion, and rent may constitute a moderate share of the total of factor costs in the consumers' goods industries, they can be no more than a very small fraction of the total of indirect taxes[14] and even a smaller part of total taxes, and do not substantially affect our estimates.

Our assumption that the purchase of government bonds by the public is a tax is based on the following characteristics attending Soviet bond sales. First, purchases are at best, quasi-compulsory; very strong pressures are brought to bear on the population to invest from two to four weeks income per year in government bonds, an abnormally large amount in view of the low standard of living of the population. Second, by the so-called conversions of 1930, 1936, 1938, and December 14, 1947, the Soviet authorities arbitrarily lowered interest rates, extended maturity dates, and reduced the principal value of outstanding Soviet bonds (by ⅔) so that the public has, until now, recovered only a very small fraction of its investment—and this amount has been seriously depreciated by greatly increased commodity price levels. Economically, sales of Soviet bonds fall somewhere between being a form of taxation and a truly voluntary sale of bonds; in my opinion they have been, until now, more accurately classified as taxes.[15]

These assumptions underlie the first three estimates of the burden of taxation. The estimates may therefore be considered somewhat on the high side. For those who prefer less stringent assumptions, a second trio of estimates have been prepared utilizing more conventional notions of taxation (Section V).

Measurement of Taxation of Household

Although on the surface it appears quite simple to construct a time series of taxes on the consumer because Soviet budgetary data have been relatively accessible, the data are quite imperfect for our purposes.

The first problem arises because the cost of the consumer bill of goods is distorted by subsidies to cover losses in the production of consumers' goods (as well as in the production of producers' goods and raw materials which are subsequently used to produce consumers'

[14] Hodgman says: "Although it is theoretically desirable to include entrepreneurial-type profits, rent, interest, and the wage elements included in 'other money outlays' in value-added by a given industry, . . . the omission of these . . . elements . . . is judged to have no significant effect . . . since (they) . . . are small relative to salaries and wages and payroll taxes." (Donald R. Hodgman, "A New Production Index for Soviet Industry," Rev. Econ. Stat., Nov. 1950, XXXII, 335).

[15] This position is defended at greater length in my forthcoming book. *Cf.* also: Carl Shoup, "Forced Loans," *Curbing Inflation through Taxation* (New York, 1944), pp. 127 ff. Professor Shoup discusses ways of separating out the tax element in forced loans.

goods). The major case in point is the machine tractor station complex (MTS).

The receipts of the MTS valued at the low obligatory delivery prices have typically amounted to less than 25 per cent of their expenditures thereby involving a monetary subsidy from the state. In addition, part of the regular operating subsidies paid to enterprises by the state lower the cost of consumers' goods either directly or indirectly. It may be contended that it is incorrect to designate as a levy on the consumer a tax which finances a subsidy on consumers' goods,[16] since the tax simply substitutes for the true cost of the commodity. If this argument were accepted, consumers' goods subsidies would have to be subtracted from taxes collected from the consumer.

On the other hand, it may be contended that to the extent that consumers' goods are subsidized they take on the character of government services—become part of the nonconsumption expenditures of the state as we have defined them—and must be treated in the same manner. In this case, the subsidies would constitute a legitimate part of the tax burden as we have defined it. There would seem to be two significant differences, however, between services typically underwritten by the state and the subsidies under discussion.

First, the consumers' goods products which benefit from subsidies are commodities which are generally purchased at market price by consumers and are rarely offered to the population free of charge, whereas it is not uncommon for some social services to be distributed free of charge. Second, the subsidies on consumers' commodities are not the result of Soviet social policy but are rather a by-product of (1) the peculiar accounting relationship between the state and the MTS and, (2) an economic policy designed to achieve cost-price stability. For these reasons subsidies on consumers' goods will not be considered part of the tax burden.[17]

No adjustment is required for subsidies to producers' goods industries. The total cost of producers' goods should be included in the value of nonconsumption. To the extent that subsidies to producers' goods industries undervalue such output, the cost of nonconsumption is undervalued. Since the sum of the subsidized cost of producers' goods plus the subsidies is equal to the full cost of output, the tax on the

[16] For example, suppose that a loaf of bread originally sold by the state for two rubles received a one ruble subsidy which was paid for by the consumer in the form of a turnover tax. The consumer would still be paying two rubles for the bread but one ruble would be in the form of a tax and one ruble would be the subsidized cost.

[17] One further argument should be noted. It could be claimed that the MTS are not, in fact, subsidized, but that the monetary subsidy is simply a result of undervaluing, by the use of obligatory delivery prices, the receipts in kind of the MTS. Unfortunately, we do not know the precise extent of the undervaluation. The reader persuaded by this argument can ignore the subsidy adjustment attempted below.

consumer should include payments required to finance both of these categories of state expenditure.

In the statistical study presented below, no adjustment for subsidies to consumers' goods industries has been made in the principal series presented (Series I and II) because the data are not available. For a limited number of years an attempt is made, however, to show the effect on the tax burden of adjusting for such subsidies (Series III).

The second major imperfection in our data exists because a small percentage of the major indirect taxes which appear in the Soviet budget do not fall on the consumer but are levied on producers' goods and to some extent on consumers' goods which are not purchased by the population.[17a] These can in no sense be considered a burden on the consumer but constitute simply a bookkeeping transaction within the state sector. It is impossible to separate out precisely these two categories of indirect taxes. Nevertheless there is enough information to make some reasonable estimates after 1931, and this is done.

A further problem is created by the Soviet practice of collecting the turnover tax largely at the wholesale level, *i.e.*, before the commodities are bought by the household. If, for example, inventories on which the turnover tax is paid, are increasing (decreasing), the rate of tax on the household would be overstated (understated). No attempt is made here to correct for the lag between receipt of tax by the budget and payment by the population.

II. *Some Specific Problems and Assumptions in Measuring Income and Taxation*

In addition to the general methodological problems discussed above, many specific problems arose in constructing the estimates presented below, some due to absence of data and others to imperfections in the data. These will now be considered. Details of the computations and sources of data are presented in an appendix to the paper.[18]

Consumer Outlay Categories

A. Retail trade turnover: Retail trade turnover is the largest category of consumer outlay. It includes all commodities valued at market price which are sold by state and cooperative retail stores and on the collective farm market. Data are available for the whole prewar period under consideration (1925/6-1940). No data are available, however, for 1948-50. The estimates for these years were complicated and are presented in the appendix.

[17a] For example, the profits and turnover taxes on commodities purchased by the Ministry of Armed Forces.

[18] Available upon request from the Russian Research Center, Harvard University, Cambridge, Massachusetts.

The data have to be adjusted for the fact that not all of retail trade sales are to consumers. Bergson (quoting Margolin) points out that 11.5 per cent of state and cooperative store turnover and 10 per cent of collective farm market turnover constitute sales to institutions rather than to the household.[19] The official figures for retail trade turnover are therefore reduced by 11 per cent for all years under consideration. This assumption seems to be in accord with independent data published for the period 1925-30; it is not known whether the percentage of institutional trade in the retail trade turnover has changed in the postwar period.

B. Consumer services: Consumers make substantial outlays for services such as rent, utilities, passenger transportation, amusements, etc. Bergson (*ibid.*), quoting Margolin, indicates that in 1934 and 1938, consumer outlays for services amounted to slightly more than 12 per cent of their outlays for goods. Independent data for 1925-30 give the same percentage. This percentage is assumed valid for the postwar period also, although there is no evidence to either support or refute the assumption.

C. Purchases of government bonds: For most years it was possible to obtain directly figures for sales of bonds to the public. For some years, however, only the total increase in the national debt was available. This includes, in addition, investment of the free reserves of the savings banks, surplus funds of the state insurance organization (*Gosstrakh*), and other minor investors. Since the percentage shares of these different investors in new issues has been fairly constant over time, the purchases by the population can be estimated, without large error, for those years in which only the total loan figures are available.

D. Trade union and other dues: Bergson[20] estimates that expenditures by the population on dues in 1935 were 1 per cent of the total wage bill. Since wage bill data are available for the prewar period, the 1 per cent relationship is used to estimate a figure for dues for each year from 1925 to 1940. Wage bill figures are not available for the postwar period. Social insurance collections, which are a function of the wage bill, are available for all years, however, and are used to estimate trade union and other dues for 1948-50. In 1940, trade union and other dues were 18.8 per cent of the social insurance collection; this ratio is applied to 1948-50. The correctness of the estimate depends on the assumptions (1) that the ratio of trade union and other dues continued to be 1 per cent of the wage bill in the postwar period and (2) that social insurance receipts were a constant percentage of the

[19] Bergson, "Soviet National Income and Product," Appendix, p. 9.
[20] *Ibid.*, p. 10.

wage bill from 1940-50. Both of these assumptions appear to be reasonable; in any case the item is so small that even a large error would have virtually no effect on the results.

E. Purchase of shares in cooperatives: Data for this item are not available after 1930. Since it is small, extrapolation was not attempted and figures are omitted after 1930.

F. Taxes: Direct taxes on the population are a form of consumer outlay and must be included in our total consumer expenditure figure. Indirect taxes paid by the population are included implicitly as part of the retail trade turnover.

G. Deposits in savings banks: The household deposits a small part of its net income each year in savings banks. The increase in savings bank deposits over the year represents another form of income disposal by the household. Data on savings deposits are available for the entire period under consideration.

H. Cash holdings: If consumer outlay is not equal to consumer income, the difference is reflected in a change in the amount of cash held by the household. Therefore in order to estimate consumer income from the outlay side, it is necessary to add the change in cash balances held by the population to consumer outlay. This is equivalent to looking upon the change in cash balances as another way of disposing of income.

Consumer money income is assumed to have been increased (decreased) each year by the increment (decrement) to currency in circulation. The assumption is made that the entire increment to currency in circulation is held by the population.[21] Changes in the amount of currency in circulation are available for all years through 1937, and for 1940. For these years changes in currency in circulation are observed to have been correlated with changes in the average wage rate, the national wage bill (payroll), and the value of retail trade turnover. Using these relationships, estimates were made for 1937-1939 as well as for 1948-1950 (where our estimates of the value of retail trade turnover alone served as a rough guide).

Taxation of the Consumer

Estimates of consumer taxation are fairly straightforward with the exception of the two adjustments mentioned above, *viz.*, (a) to allow for indirect taxes which do not fall on the consumer and (b) to deduct subsidies on consumers' goods from total taxes on the consumer. The

[21] This is a reasonable assumption. Enterprises and organizations hold virtually no cash in their tills with the exception of paydays when the local branch of the state bank supplies enough cash to meet the payroll. Cash received by enterprises from sales to the population is deposited with little delay in the bank. Almost all inter-enterprise transactions are financed by bank account transfers rather than in cash.

general methods used will be described briefly below. Details are contained in the appendix.

A. Turnover tax and profits: For the period 1935-41, turnover tax receipts and profits are broken down, in Soviet sources, by branch of industry and commissariat. These data are used to make rough estimates of the percentages originating in consumers' and producers' goods for these years. The results are extrapolated for years in which data are unavailable.

B. Social insurance and other indirect taxes: The breakdown of the social insurance markup by consumers' and producers' goods industries is based on Bergson's estimates for 1937.[22] The same relationship is used for other indirect taxes. This is an extremely crude expedient but no better method could be found.

Other indirect taxes include such items as customs receipts, tax on services, tax on cooperatives, local taxes on industry, and state income from timberlands. Detailed figures for each item are not available for all years; however since total other indirect taxes remained a fairly constant percentage (3 per cent) of budget income in the years for which the data are complete, this ratio was used to fill in the gaps.

C. Subsidy adjustments: Subsidies are subdivided into MTS subsidies and subsidies granted directly to enterprises operating at a loss.

The MTS subsidy for 1938-40 can be estimated directly from official data; estimates for 1937, and 1948 to 1950 were based on 1938-40 relationship and other scattered information (see appendix).

Direct subsidies to industry are derived as a residual figure. From Soviet sources it is known that the budget expenditure category "financing the national economy" includes the following expenditures: investment in fixed capital, investment in working capital, gross expenditures on the MTS, "operating" expenditures,[23] and subsidies. Estimates for the first three of these categories and for the total (financing the national economy) are available for the nonwar years since 1937. A residual comprising subsidies and operating expenditures can therefore be estimated. As operating expenditures are generally considered to be small, it is assumed that the entire residual is subsidies.

Most MTS activity is devoted to the production of food and industrial crops eventually purchased by the household. Therefore in making the deduction from taxes, it is assumed that two-thirds of the MTS subsidy applies to commodities purchased by the consumer; this amount is deducted.

[22] Bergson, "Soviet National Income and Product," Appendix, p. 11.

[23] Operating expenditures (*operatsionnye raskhody*) are expenditures on training workers, scientific research, and other projects administered by enterprises but not part of the normal operating expenses of production.

Soviet literature clearly indicates that the bulk of the general operating subsidies applies to nonconsumers' goods products. However, since subsidies to the coal industry and other raw materials and producers' goods affect the cost of consumers' goods, these should be taken into account. Accordingly, it is assumed that 20 per cent of general subsidies affect consumers' goods costs and are deducted from taxes. Not too much faith is placed in these adjustments and they are not included in our main series; crude as they are, however, the results achieved are not without interest.

Further Considerations

Soviet budget data are originally presented in plan form for the current year; in the subsequent year preliminary estimates of the actual results are published; another year later the final results are published. This is also true of most other financial magnitudes. As far as possible final and preliminary estimates were used; in many cases, however, planned figures were the only ones available and these were used. No distinction will be made between the preliminary and final estimates since they rarely differ by more than a fraction of one per cent; planned figures will be so designated (in the statistical appendix) and must be accepted with reservations.

III. *Statistical Results: "Burden" of Taxation*

Estimates of consumer money income (by outlay) for the periods 1925/6-40, and 1948-50, are presented in Table I. Sufficiently reliable data were not available for the period 1941-47. The estimate for 1931 probably understates consumer income by 15-20 per cent because of the huge illegal trade which occurred in this year and which is not reported in the retail turnover figure.

Three series of estimates of consumer taxes are presented in Table II. Series I, which covers the entire period from 1925/6-1940, and 1948-50 is unadjusted for (1) the turnover tax, profits, and other indirect tax data presented in the budget which are not paid by the consumer and (2) subsidies on consumers' goods. This series consequently overstates taxation of the consumer. Series II is adjusted for the taxes not paid by the consumer; the adjustment is not attempted for the period 1925/6-1929/30. Series III attempts an adjustment for subsidies to consumers' goods industries for the years after 1937. These latter two series, and particularly Series III, give a much closer approximation than Series I to the actual average rate of money taxation of the consumer; on the other hand, Series I enables us to observe the dynamics of tax policy in the New Economic Policy and First Five Year Plan periods.

TABLE I.—SOVIET CONSUMER MONEY INCOME (OUTLAY) 1925/6–1950
(billions of rubles)

	1925/6	1926/7	1927/8	1928/9	1929/30	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1948	1949	1950
Retail sales, adjusted	10.4	12.2	13.4	15.2	16.5	24.4	42.5	54.6	67.5	85.6	108.8	127.8	146.3	172.1	192.5	357.0	401.0	449.0
Consumer services	1.1	1.4	1.7	1.8	2.1	3.5	5.7	7.4	9.1	11.3	13.9	15.9	17.7	20.7	23.1	42.8	48.1	53.9
Trade union dues	.1	.1	.1	.1	.2	.3	.4	.5	.6	.7	.9	1.1	1.2	1.4	1.6	3.0	3.3	3.6
Shares in coops	0	0	.1	.1	.2	—	—	—	—	—	—	—	—	—	—	—	—	—
Direct taxes	.6	.9	1.1	1.1	1.1	1.6	2.4	3.5	3.8	3.2	3.8	4.0	5.1	7.0	9.4	33.2	33.7	35.8
Purchases of government bonds	0	.1	.3	.1	.7	1.6	2.4	3.2	3.4	3.8	3.5	4.3	6.1	6.7	9.2	20.3	23.5	26.4
Increment in savings	.1	.1	.1	.2	.2	0	.2	.2	.5	.8	1.1	1.0	2.0	.6	.2	1.5	2.6	1.5
Increment in cash holdings	.2	.3	.4	.7	1.7	1.3	2.7	−1.6	.9	2.0	1.6	1.5	1.6	1.6	0	3.0	3.0	3.0
Total	12.5	15.1	17.2	19.3	22.7	32.7	56.3	67.8	85.8	107.4	133.6	155.6	180.0	210.1	236.0	460.8	515.2	573.2

For sources and methods, see appendix (fn. 18).

TABLE II.—MONEY TAXATION OF SOVIET CONSUMER 1925/6–1950
(billions of rubles)

	1925/6	1926/7	1927/8	1928/9	1929/30	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1948	1949	1950
Turnover tax	—	—	—	—	—	11.7	19.6	27.0	37.6	52.2	65.8	75.9	80.4	96.9	105.9	247.3	245.5	236.1
Craft and excise taxes	1.3	1.9	2.2	2.9	4.6	—	—	—	—	—	—	—	—	—	—	—	—	—
Profits	1.2	1.8	2.4	3.3	5.4	6.0	6.6	7.3	6.4	7.8	14.2	16.9	15.7	26.3	32.0	39.3	69.6	65.5
Other indirect taxes	.6	.6	.6	.8	1.3	1.1	1.1	1.3	1.5	2.1	2.7	3.3	3.8	4.6	5.4	11.6	12.9	13.1
Direct taxes	.6	.9	1.1	1.1	1.1	1.6	2.4	3.5	3.8	3.2	3.8	4.0	5.1	7.0	9.4	33.2	33.7	35.8
Purchases of government bonds	0	.1	.3	.1	.7	1.6	2.4	3.2	3.4	3.8	3.5	4.3	6.1	6.7	9.2	20.3	23.5	26.4
Social insurance	.8	.9	1.0	1.2	1.4	2.2	3.6	4.3	5.7	7.0	8.9	6.6	7.2	7.6	8.5	16.2	17.5	19.0
Total I	4.5	6.2	7.6	9.4	14.5	24.2	35.7	46.6	58.4	76.1	98.9	111.0	118.3	149.1	170.4	367.9	402.7	395.9
Adjust for non-consumption tax	—	—	—	—	—	4.6	7.0	8.7	10.5	11.6	18.6	22.0	20.4	24.9	28.9	50.4	54.3	52.2
Total II	—	—	—	—	—	19.3	28.7	37.9	47.9	64.5	80.3	89.0	97.9	124.2	141.5	317.5	348.4	343.7
Adjust for subsidies	—	—	—	—	—	—	—	—	—	—	—	6.4	6.8	8.9	8.0	19.7	19.0	15.6
Total III	—	—	—	—	—	—	—	—	—	—	—	82.6	91.1	115.3	133.5	297.8	329.4	328.1

Dividing each of the three taxation series by consumer income gives estimates of the average rate of money taxation. These are presented in Table III.

In the succeeding discussion of these ratios, the reader is cautioned to keep in mind that:

(a) Series I is not an actual rate of taxation but rather an index of the movement in the rate of taxation over time. Series II and III are better approximations of the actual rates of money taxation.

(b) These series do not include income in kind but do include part of taxation in kind. This leads to some overstatement of the average rate of taxation.[24]

(c) Many of the estimates upon which these series are based are crude.

IV. *Burden of Taxation: The United States and Soviet Union Compared*

The sheer size of the Soviet tax burden is the most striking result of the calculations summarized in Table III. That more than half, at times almost two-thirds, of personal income, should return to the state in the form of taxes is indeed revealing with regard to the importance of state activities in the Soviet economy. A perspective on the significance of the Soviet rate of taxation can be gained by comparing it with

[24] Taxation in kind takes the form of compulsory deliveries to state and cooperative procurement agencies by collective farms and individual farmers of a specified part of their crops at very low prices. These prices are a fraction of the retail price at which the state resells the same commodities to consumers and do not even cover cost of production. When the state resells these commodities, the difference between the cost to the state (procurement price plus the costs of processing and distribution) and retail price is usually siphoned into the state budget in the form of turnover tax. The portion of the turnover tax which is collected by virtue of a procurement price below cost of production is the monetary equivalent of part of the tax in kind. Another part of the tax in kind is, of course, invested directly by the state and is not reflected in the money tax statistics.

Bergson estimates consumption of farm income in kind to have amounted to 30 billion rubles in 1937 ("Soviet National Income and Product," p. 214). My own estimate for the tax in kind on grains in 1937 is 15 per cent; if this figure is assumed to be representative of all agricultural commodities in 1937, income in kind before tax is estimated to have been about 35 billion rubles. To this must be added 2.5 billion rubles in army subsistence (*Ibid.*). Thus total household income, including income in kind, is 37.5 billion rubles greater than our estimate of consumer money income (Table I), or 193 billion rubles. Taxes as computed in Table II are 43 per cent of total household income. However, as we noted above, taxes must also be increased to take into account that part of the tax in kind not reflected in the turnover tax. This would probably increase the average rate of tax by 3 or 4 points. Thus, for 1937, our estimate (Table III) of the average rate of taxation is probably 6 or 7 points higher than the true rate of taxation (in money and in kind). The adjustment for most other years would not be so great: because of the excellent harvest in 1937, the tax in kind was exceptionally small (discussed in Ch. 7 of my forthcoming book).

the rate of taxation in some western nation, and this will be attempted below.

TABLE III.—AVERAGE RATE OF MONEY TAXATION 1925/6–1950

(Per Cent of Consumer Income)

	1925/6	1926/7	1927/8	1928/9	1929/30	1931	1932	1933	1934
I	36.0	41.1	44.2	48.7	63.9	(72.2)	63.4	68.7	68.1
II						(57.2)	51.0	55.9	55.8

	1935	1936	1937	1938	1939	1940	1948	1949	1950
I	70.9	74.0	71.3	65.7	71.0	72.2	79.8	78.2	69.1
II	60.1	60.1	57.2	54.4	59.1	60.0	68.9	67.6	60.0
III			53.1	50.6	54.9	56.6	64.6	63.9	57.2

Sources: Derived from Tables I and II.

Because of the institutional differences between the Soviet Union and capitalist nations many consumer outlays which would not be included in taxes have to be included in this category in the case of the Soviet Union. For this reason the estimates of the average rate of taxation of the consumer computed in this chapter cannot be meaningfully compared with similar computations for other countries. In order to facilitate comparison, an attempt will be made to bridge the institutional gap, although the significance of such a comparison is admittedly very limited.

The procedure will be to estimate the total of taxes (*i.e.*, federal, state and local) on the consumer in the United States, defining tax on the consumer in the same way as it is defined in the Soviet Union. Thus, included in our total of taxes on the consumer will be the following unusual aggregates: purchases of government bonds by the public; the annual contribution to social insurance which is assumed to be entirely passed on to the household; undistributed corporate profits (because retained profits of Soviet industry were considered a tax) and sale of corporate securities to the population for purposes of financing new investment. The incidence of indirect taxes on business enterprises is assumed to fall entirely on the consumer. The estimates for the United States are presented in Table IV.

We see that the rate of taxation in the United States for the years 1940 and 1949 is less than half that in the Soviet Union, even when the United States' data are structured in accordance with Soviet institutional conditions. The difference between the Soviet and U.S. rates

reflects the much higher rate of nonconsumption expenditures in the U.S.S.R. The psychological burden of the taxation in the U.S.S.R. is undoubtedly greater, relative to the United States, than the figures would indicate because of the much lower level of real national income in the U.S.S.R.; this effect would tend to be offset, to some extent because the Soviets have never experienced higher standards of living,

TABLE IV.—AVERAGE RATE OF TAXATION IN THE UNITED STATES, 1940 AND 1949

(Billions of Dollars)

	1940		1949	
	Soviet Framework	Western Framework	Soviet Framework	Western Framework
A. Personal Income[a]	79.0	78.3	208.3	206.1
B. Taxation of household				
Direct taxes	2.6	2.6	18.7	18.7
Indirect taxes	10.0	10.0	21.3	21.3
Purchases of government bonds	.5		4.3	
Social Insurance	2.3		5.7	
Undistributed corporate profits	2.4		9.8	
Sales of new corporate securities[b]	.6		4.6	
Total taxes (B)	18.4	12.6	64.4	40.0
Average Rate of Taxation (B÷A)	23.3	16.1	30.9	19.4

Sources: *Treasury Bulletin*, published monthly by the United States Treasury Department; *Survey of Currency Business*, published monthly by the United States Department of Commerce.

[a] Each American worker pays, out of his own gross wage, part of the social insurance contribution made in his name. Since we view the social insurance contribution as a tax in the Soviet framework, we consider the workers' contributions an addition to income. This accounts for the difference between personal income figures for each year.

[b] Sale of new corporate securities does not include securities which were issued for the purpose of refunding previously issued securities.

because so large a part of their income is taken away in the form of higher prices rather than as direct levies upon income,[25] and because their marginal tax rates appear to be relatively low.

V. *Alternative Measurements of the "Burden"*

The burden of Soviet taxation as computed above is based on a rather arbitrary definition of what constitutes a tax on the Soviet population. For this reason, three other measurements of the average rate of taxation will be presented and briefly discussed; the first two constitute an approximation to measuring the Soviet burden of taxation in a capitalist institutional framework.

[25] *Cf.* Holzman, *op. cit.*, pp. 425-27.

The rates of taxation presented in Table III are on the "high" side. For reasons discussed above, certain elements of the Soviet cost-price structure have been considered as taxes although they contain elements of factor cost. For example, profits have been considered a tax rather than a return to capital or as a reward for exceptional entrepreneurial ability. And the social insurance markup has been considered a tax when a case could be made for treating it as an addition to wages. We have also treated sales of government bonds to the population as a tax although such sales should be classified somewhere in between taxes and "truly voluntary" sales of government bonds. Therefore, we present below some alternative estimates of the burden of Soviet taxation, leaving the reader to his own preference.

In the first alternative estimate, both sales of government bonds and the social insurance markup are eliminated from the total of taxes as computed in Series II of Table II. The resulting figures, divided by total income, are designated Series IV in Table V below. If the reader desires to add the subsidy adjustment of Series III, this can be approximated roughly by simply deducting from Series IV, the difference between Series II and III (in Table III).

In the second estimate, retained profits are added to sales of government bonds and the social insurance markup; and all three items are deducted from the total of taxes (II) and divided by total income. The resulting ratio is designated Series V.

The third modified series (VI) is conceived in terms of a very crude benefit theory of taxation. Budget expenditures on education and health services are deducted from the total of taxes on the ground that the household benefits directly from these expenditures in contrast to other budget expenditures (investment in the national economy, defense, administration, etc.) which either do not benefit the household directly, or at all. In addition, transfer payments (*e.g.*, social security, social insurance,[26] subsidies to mothers, and the debt service) are removed from both the income and tax series. Although taxation to finance transfer payments is not without its psychological burden, the impact of such taxation is certainly offset in part by the distribution of the various transfer payments.[27]

[26] Social security includes pensions and other assistance, upkeep of invalid homes, rehabilitation of injured workers, etc. Social insurance includes insurance for sickness, unemployment and old age.

[27] One justification for this approach is that the Soviet government does finance a relatively large program of social services (educational, medical) and transfer payments. Objections can be raised against the deduction of budget expenditures on education from taxation. It may be contended that a part of these expenditures cannot be considered to benefit the population directly since it serves to finance communist propaganda, the press,

In this series (VI), as in the case of Series IV and V, a rough adjustment for subsidies to consumers' goods industries can be made by the reader. The three new series are presented in Table V attached.

It can be seen in Table V that the average rate of taxation is very high even after the above-mentioned adjustments are made. Deducting the social insurance markup and sales of government bonds from total taxes (IV) reduces the burden by only seven to eight percentage points on the average. Deducting, in addition, the retained profits of state enterprises (Series V) reduces the burden by about another 3 points on the average. With all these deductions, the average rate of taxation exceeds 46 per cent in the postwar period.

The burden is reduced by as much as one-third to two-fifths when education and health services are deducted from taxes, and transfer payments are removed from both income and taxes. The average rate of tax, even with this generous interpretation, still ranges between 35 and 50 per cent of income.

It is of interest to attempt to answer the question: to what extent did increases in the rate of taxation serve to finance increased social services and transfer payments to the population. For this purpose, the ratio of the total of budgeted expenditures on health, education, and transfer payments to total taxes (Series II) was calculated; the results are presented as Series VII in Table V. The ratio declined from 1932 to 1933 but increased thereafter until 1937 with a large jump occurring from 1935 to 1937. In other words, an increasing share

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scientific research, a part of which may be directed at constructing atom bombs, and so forth. There is undoubtedly substance to this objection.

It does not appear to be feasible, however, to draw a sharp distinction (particularly in terms of budget expenditures) between education and propaganda in the Soviet Union (or in most other countries).

Since 1949, and perhaps earlier, expenditure on scientific research has been presented in the budget as a separate category, alongside of education, under the more general heading: social and cultural expenditures. From 1949 to 1951, the separate expenditures on science amounted to roughly 10 per cent of expenditures on education (*cf.* Finance Minister Zverev's recent budget speeches). This provides an indication of the possible extent of expenditures on scientific research when they were included under education. It does not exclude the possibility, of course, that large outlays for atomic and other research are still included under education. Unfortunately, there is, to my knowledge, no reliable information on this matter.

Since 1949, expenditures on the press, theatres, etc. have been included in the budget under education only to the extent that the separate enterprises are not self-financing. *Cf.* N. N. Rovinskii, *Gosudarstvennyi biudzhet SSSR* (State Budget of the USSR), Moscow 1949, p. 292. Before 1949, gross expenditures on these categories were financed by the budget. I am not sure whether or not budget expenditures on education are net of receipts from tuition fees. If not, there is an overstatement of expenditures on education from this source.

TABLE V.—AVERAGE RATE OF MONEY TAXATION RECOMPUTED, 1932–1950
(in per cent)

	1932	1933	1934	1935	1936	1937	1938	1939	1940	1948	1949	1950
Average Rates of Taxation												
II. Basic rate of tax (from Table III)	51.5	55.9	55.8	60.1	60.1	57.2	54.4	59.1	60.0	68.8	67.6	60.0
IV. Adjusted for social insurance and sales of government bonds	42.4	46.9	47.4	52.1	53.1	51.6	48.3	53.5	53.6	62.1	60.8	53.0
V. Adjusted for social insurance, sales of government bonds, and retained profits	36.9	42.3	44.9	49.3	48.6	48.4	46.3	50.1	50.7	60.3	57.2	50.1
VI. Adjusted for expenditures on health, education, and transfer payments	38.3	43.3	42.7	45.2	43.1	37.8	35.9	42.2	43.1	48.8	47.1	40.6
Importance of Benefits from Taxation												
VII. Ratio of health, education, and transfer payments to total taxes (series II)	30.3	28.0	28.4	28.7	32.4	38.7	38.0	32.9	32.6	34.7	36.3	37.8

Sources: See appendix (fn. 18).

of taxes on the consumers returned fairly directly to the population in this period, and less was devoted to other nonconsumption items (*e.g.*, defense, investment, administration). In 1939, as the Soviets prepared for war, this trend was sharply reversed. From 1948 to 1950, the relative importance of expenditures on social services was once again on the rise, and by 1950 had almost reached the 1937 percentage level.[28]

VI. *Trends in the Burden of Taxation*

In this section, changes in the average rate of taxation are treated as an indicator of changes in the rate of nonconsumption as well as of the psychological burden of taxation. For this purpose it is important to note that the average rate of taxation is affected by changes in the degree of repressed inflation in the state sector of the economy.[29] Increases in repressed inflation are reflected in higher prices in the collective farm markets, hence in larger household incomes from sales (or expenditures) in these markets. At the same time, an increase in repressed inflation is indicative of too low a rate of taxation to support the rate of nonconsumption presumed by the state investment plan. So when repressed inflation is on the rise, taxes tend to be understated, household income overstated, and the burden (taxes/income) therefore understated relative to the burden which would obtain if taxes were large enough for fiscal stability. Conversely, when repressed inflation is being reduced, the burden of taxes tends to be overstated. If the effects of repressed inflation could be removed from the ratio of taxes to income, the resulting series would obviously be a better index of changes in the rate of nonconsumption (though not, perhaps, of the psychological burden of taxation) than the unadjusted series presented above in Table III.

If the *volume* of trade on the collective farm markets had remained relatively constant, then it would be possible to remove a large part of the effect of changes in repressed inflation by deducting from the household income series, income from sales on the collective farm markets. Unfortunately, the volume of trade on these markets did not remain constant. Sales were gradually wiped out between 1927 and 1931 as the state attempted to liquidate (what was then called) private

[28] We have made no adjustment here for the fact that a ruble used to buy a unit of equipment is probably worth a lot more than a ruble used to buy a unit of education or health. *Cf.* N. Jasny, "The Soviet Price System," *Am. Econ. Rev.*, Dec. 1950, XL, *passim*.

[29] By repressed inflation we mean simply that the amount of goods the household would like to buy from state and cooperative stores at going prices is in excess of the amount offered for sale. This excess demand typically spills over into the collective farm markets (where price is set freely by supply and demand) raising prices in these markets above those in state and cooperative stores.

trade; the collective farm markets were reconstituted in 1932 and the volume of trade rose steadily from 1932 to 1939, and perhaps to 1940. For this reason, no attempt will be made to quantify the impact of repressed inflation on the average rate of taxation; this distorting effect of repressed inflation will be taken into consideration, however, in the discussion which follows.[30]

The First Five Year Plan Period

Series I shows a continuous increase in the rate of taxation from 1925/6 until 1929/30; the rate of increase is fairly constant with the exception of 1929/30 when a big jump upward occurs. These five years include the last three years of the NEP and the first two years of the First Five Year Plan. The figures indicate that during the last three years of the NEP the state was not just marking time until the blueprints for a planned economy were completed and ready to be put into operation; on the contrary the state was annually pre-empting larger percentage shares of the nation's output.

It is interesting that the first year of the plan period (1928/29) does not mark a sharp break with the preceding period; it is not until 1929/30 that the full impact of the industrialization drive is felt by the population. This seems to be in accord with other available information. It was originally planned that the net rate of investment would be 22.6 per cent in 1928/29 in comparison with 18.9 per cent in 1927/28, and 25.1 per cent according to the minimal variant or 28.2 per cent according to the optimal variant in 1929/30.[31] Apparently progress in 1928/29 was sufficiently satisfactory to warrant raising the target for investment for 1929/30 by about one-third over the original plan.[32] This combination of facts seems to indicate that only a moderate

[30] Other modifications would be in order if we were particularly concerned with determining the Soviet rate of nonconsumption.

A closer approximation to the actual rate of nonconsumption is obtained by removing transfer payments from both the income and tax series. This has the effect of reducing the ratio of taxes to income, but leaves the trend from year to year relatively unchanged.

It would also be appropriate, in attempting to determine the actual rate of investment, to add to the total of taxes, increments (decrements) to currency in circulation. For to the extent that taxes, profits of nationalized industry, and receipts of the state from other sources are insufficient to cover Soviet nonconsumption expenditures (including those financed by short-term bank loans of the *Gosbank*) the government introduces new currency into circulation. Including changes in currency in circulation with taxes has the effect, in most years, of increasing the ratio of taxes to income, but with the exception of the years 1932 to 1934 it does not affect the trend.

Since we are primarily concerned with the rate of taxation of the population neither of the above adjustments is made, nor are certain other minor sources of financing investment taken into consideration.

[31] M. Dobb, *Soviet Economic Development Since 1917* (London 1948), p. 236.

[32] *Ibid.*, pp. 242-43.

rate of increase was planned for 1928/9 relative to 1927/8, and that a much sharper increase probably occurred in 1929/30. Our figures are in accord with this and, if anything, suggest an even sharper shift to nonconsumption in 1929/30 than was contemplated in the revised plan.

The large increase in the rate of taxation in 1931 may be largely spurious. By 1931 all legal private trade had been abolished, and it was not until mid-1932 that the collective farm markets were legally organized. In the interim a large amount of illegal private trade is reported to have been conducted, the value of which was not included in the official figures.[33] Furthermore, to the extent that peasants found it difficult to conduct trading operations, consumption in kind was probably increased. Both of these factors would operate to cause our rate of taxation to be spuriously high in 1931, the first by reducing computed consumer money income, and the second by causing a real shift from consumption of marketed commodities to consumption in kind.

Some illegal trade may also have been conducted in 1929/30 and our tax rate for that year may be high. However, even if the illegal trade were taken into account, an extraordinary increase in the rate of taxation would probably still have occurred in 1929/30; and the rate for 1931 would probably fall somewhere between the rates for 1929/30 and 1932.

Repressed inflation increased steadily from 1928 to 1932, and collective farm market prices are reported to have reached a peak in 1932.[34] Prices of some foods were 15 times the ration prices of comparable goods sold in cooperative stores.[35] The growth of repressed inflation in this period implies that the share of the government sector in the national output was growing even more rapidly than the average rate of taxation series indicate.

Second and Third Plan Periods

From 1932 to 1936, the average rate of taxation increased slowly,

[33] The figures for retail trade turnover are broken down as follows:

	1929/30	*1931*	*1932*
State	4.1	6.5	15.5
Cooperative	12.4	18.2	25.8
Kolkhoz	—	—	7.5
Private	1.1	—	—

Sources: See appendix.

[34] M. M. Lifits (editor), *Ekonomika sovetskoi torgovli* (Economics of Soviet Trade) Moscow 1950, p. 319.

[35] Sh. Turetskii, "Puti planivoraniia tsen" (Methods of Price Planning), *Planovoe khoziaistvo* (Planned Economy), 1936 No. 3, p. 130.

by a few points a year, on the average. As an indicator of the rate of nonconsumption, this increase has an upward bias due to the fact that from 1933 to 1937, repressed inflation was being gradually worked off. In 1933, repressed inflation is reported to have declined by about 50 per cent;[36] prices of agricultural products declined by 20 per cent in 1934 and 12 per cent in 1935 and by December 1936 had reached a level which was from 1/3 to 1/3.3 of the 1932 level.[37]

It is not possible to state with confidence whether the absolute level of consumption from marked output rose, remained the same, or declined from 1932 to 1936. The standard of living could have risen if national output per capita was increasing at a faster pace than the rate of taxation (nonconsumption); or fallen if national output had remained the same or declined. Soviet indexes of output and productivity for industry both show unusually rapid increases beginning in 1933;[38] the output of the major crops also increased from 1933 to 1935, with a sharp decline in 1936, however.[39] All in all, the indications are that some increase in living standards probably occurred from 1932 to 1936.

The situation from 1936 to 1938 is unambiguous: the share of consumer income absorbed by taxes declined by 6 to 7 percentage points, fairly conclusive evidence of a rise in the consumers' share in the national output. These figures are in accord with the fact that the 1937 harvest was exceptionally good, undoubtedly affecting the level of consumption in both 1937 and 1938.

In 1939 and 1940, the rate of taxation increased as rapidly as it had declined in the previous two years. This increase reflects preparations

[36] *Ibid.*, p. 133. There was a sharp decline in the amount of currency in circulation in 1933, certainly circumstantial evidence that a deflationary policy was being pursued. The movements of other financial magnitude indicate a similar policy. It is interesting to note that if we included the change in currency in circulation along with taxes in computing the average rate of taxation (as suggested in fn. 30), the trend in the rate of taxation for the years 1932 to 1934 is altered as follows:

	1932	*1933*	*1934*
Series II, unadjusted	51.0	55.9	55.8
Series II, adjusted	55.8	53.5	56.9

The rate of tax is spuriously low (as an indicator of investment) in 1932 because of the increase in repressed inflation, and spuriously high in 1933 because repressed inflation was being reduced.

[37] *Ibid.*, pp. 133, 136; Lifits, *op. cit.*, p. 319.

[38] *Cf.* A Gerschenkron, "The Soviet Indices of Industrial Production," *Rev. Econ. Stat.*, Nov. 1947, XXIX, 218; W. Galenson, "Russian Labor Productivity Statistics," *Indus. Lab. Rev.*, July 1951, IV, 500. The indexes computed by Donald Hodgman (as yet unpublished), presumably free of the specific Soviet weighting bias, bear out the statement in the text.

[39] Jasny, *The Socialized Agriculture of the U.S.S.R.* (Stanford, 1949), p. 792.

for war[40] which apparently were begun in earnest in 1939, and the smaller harvests in these years. It is surprising that the rate of taxation increased by less than 2 points in 1940 compared with 1939 in view of the threatening international outlook and need to prepare for war. Two developments may explain this low figure: First, a substantial part of increased defense needs were met by a cutback in expenditures on the national economy, particularly industry.[41] Second, repressed inflation appears to have been on the rise again in 1940 so that the change in the average rate of taxation probably understated the increase in the rate of nonconsumption.

Postwar Period[42]

The figures for the postwar period are very interesting. In 1948 the average rate of taxation was higher than in any prewar year; about 65 per cent of consumer money income was handed over to the government in the form of taxes (Series III). In 1949, the average rate of taxation declined by one percentage point; and in 1950 by about 6 percentage points . . . almost down to the 1940 rate of taxation. These reductions reflect the much publicized consumers' goods price cuts of March 1, 1949 and March 1, 1950.[43]

The principal implication of this decline in the rate of taxation is that in 1950 the consumer was getting a substantially larger share of the national output than in 1948; and since national output was undoubtedly increasing in this period, a very large percentage increase in real income. Although this may be difficult to accept in view of the tense international situation and the popular conception of a Russia arming to the teeth, it is not unreasonable.

The rate of taxation in 1950 is not low even by Soviet standards. In fact it is higher than the rate of taxation in the last prewar year, 1940, a year in which maximum peace-year preparedness efforts were being made. And in 1948 the rate of taxation was 8 to 9 per cent higher than in 1940. The reasonable interpretation, it seems, would be to consider the 1948 rate of taxation abnormally high, reflecting a structure of pro-

[40] The proportion of budgeted defense expenditures to total budgetary expenditures increased from 18.7 per cent in 1938 to 25.6 per cent in 1939 to 32.5 per cent in 1940.

[41] From 1939 to 1940, absolute expenditures on the national economy and on industry fell from 60.4 billion rubles to 58.3 billion rubles, and from 31.1 to 28.6 billion rubles, respectively. Since total budgetary expenditures were increasing, the percentage (of budgetary expenditures) declines was much greater: from 39.4 to 33.4 per cent, and 20.3 to 16.4 per cent.

[42] Soviet sources indicate that there has been little or no repressed inflation since the currency reform of December, 1947.

[43] See Moscow newspapers of March 1, 1949 and 1950.

duction not yet returned to normal after the war; and the decline in taxation from 1948 to 1950, a return to normalcy.

There are special reasons for expecting an increase in consumers' goods output in this period. During the war years consumers' stocks and reserves must have declined to an incredibly low level and provision had to be made for restocking. Furthermore, the morale of the population may have been at a low ebb after a difficult war and many years of privation; the reduction in rate of taxation may have been required for reasons of internal political stability. Finally, it should be noted that the shift in the distribution of national output toward the consumer does not at all imply that the absolute amount of resources devoted to investment, defense, etc. declined; increases in the output of consumers' goods probably were met largely out of increases in productivity and total output.

THE CYCLICAL TURNING POINTS IN AN "OPEN" ECONOMY: CANADA, 1927-1939

By EDWARD MARCUS*

Very little theoretical or empirical work has been devoted to studying the *international* transmission of the business cycle. As Morgenstern has said, "We do not have too much knowledge about the working of a business cycle in a closed economy, but we know even less about the transmission of cycles from one country to another . . . the few explanations of the international transmission offered currently are very tentative and appear more or less as mere appendixes to, or extensions of, specific cycle theories.'[1] It is with these international aspects that this article will deal, particularly as illustrated by the Canadian economy in the decade before World War II.

In general, the degree of vulnerability of an economy to external influences is assumed to vary with the dependence on foreign markets; the less self-sufficient the economy, the more sensitive it is to changes in business activity abroad. Such a relationship, however, does not always hold; Canada, for example, displayed some independence of movement during the interwar years, particularly at the peak of the cycle. In both 1929 and 1937 her downturn preceded those of the cycles in her two main external markets, the United States and Great Britain. Here world economic forces of a more general nature, rather than cyclical, tended to dominate the course of the Canadian economy. These forces arose from the many intangible commercial ties that are a concomitant of an extensive foreign trade; they reflected the impact of changes that result from shifts within specific markets for Canadian products.

On the other hand, the Canadian upturns from the troughs of 1932-1933 and 1937-1938 were clearly the response to similar moves within the economies of her two main customers. Only after the American and British recoveries had begun was Canadian business activity stimulated sufficiently to follow along.

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[1] O. Morgenstern, "On the International Spread of Business Cycles," *Jour. Pol. Econ.*, Aug. 1943, LI, 287. *Cf.* in addition to this article, G. Haberler, *Prosperity and Depression*, 3d ed. (League of Nations, 1941), Ch. 12, 13, for a summary of the literature.

These four turning points will now be examined more closely, with particular emphasis on how the relative importance of domestic and international circumstances affected their timing.

I. *The 1929 Downturn*

Although the period 1927-1929 was a prosperous one, symptoms of the forthcoming decline appeared early. Prices of the main Canadian exports—wheat and wheat flour, wood pulp and newsprint—started to sag in 1927 and 1928; an oversupply was slowly building up, and the volume of exports started to waver. Gradually, the effects on incomes and purchasing power accumulated, and other sectors of the economy ended their upward movement. As the declines spread from the main exports to production and incomes, secondary indices, such as those of the supplying industries, employment, and distribution followed.

The Canadian economy thus turned down several months before the American turning point occurred. This is not surprising, for Canada was far less industrialized, more dependent on agriculture and forestry products. Since the 'twenties were not a period of great prosperity for those industries compared with the manufacturing areas, the earlier downturn of the raw material sectors found a more vulnerable situation in Canada. Manufacturing was not so large that it could sustain an over-all prosperity, such as continued south of her border for several months more.

After the first World War, a situation of overproduction had gradually emerged in industries exploiting natural resources. Per capita wheat consumption was dropping while production was recovering.[2] In the Canadian newsprint and pulp industries the danger was all on the side of a too-rapidly increasing supply. From 1927 to 1929 installed capacity increased by one-sixth, and the operating ratio tended to remain within the range of 80 to 85 per cent of rated capacity.[3]

The danger first showed up in a weakening of the price structure. From mid-1927 to mid-1929 the Stanford University Food Research Institute's weighted average of Winnipeg cash closing prices of ten grades of Canadian wheat dropped more than 30 per cent, from $1.47 to $1.01 per bushel. The Canadian visible supply started to climb as a result of a wheat crop 80 million bushels more in 1927-1928 than in 1926-1927. World wheat stocks registered the largest annual increase

[2] *Cf.* B. Ohlin, *The Course and Phases of the World Economic Depression*, rev. ed. (League of Nations, Geneva, 1931), pp. 21, 39, 45, 49, 93, 124-25.

[3] *Cf.* E. A. Forsey, "The Pulp and Paper Industry," *Can. Jour. Econ. Pol. Sci.*, Aug. 1935, I, 502; Ohlin, *op. cit.*, p. 59; C. E. Fraser and G. F. Doriot, *Analyzing Our Industries* (New York, 1932), p. 317.

since the war. Wheat flour prices dropped almost 20 per cent during the same period. Wood pulp prices also declined, particularly in 1927, groundwood—Canada's main wood pulp export to the United States—going from $1.50 per 100 pounds in the first quarter to $1.15 in October.[4]

In 1928 the volume of Canadian wood pulp exports, particularly to the United States, ended their upward trend, and in some months even registered declines. Since 80 per cent of these exports went to the United States, and since the main form—groundwood—was used to make newsprint, we would expect the export movement to follow that of American newsprint production. In contrast to the Canadian newsprint industry, the American output was declining, the average for 1928 having dropped more than 15 per cent below 1926. Not protected by a tariff as was the rest of their paper industry, American producers were being forced out of newsprint into tariff-protected high quality paper manufacture, using other pulp, particularly the chemically prepared types. In addition, the use of chemical pulp was becoming of increasing importance in the manufacture of paper and paperboard. In short, the American demand for wood pulp was shifting from groundwood, of which over 90 per cent of the imports were supplied by Canada, to the chemical pulps, for which Canada was a much less important supplier—of only about one-third of the imports.[5]

In 1928 the growing overcapacity in the newsprint industry brought on a disastrous price war. Started by negotiations over the renewal of the large Hearst newspaper chain contract with International Paper, the price war spread to all companies. Contract prices dropped a quarter in the summer months. However, since the volume of newsprint consumption was a resultant of the circulation and advertising linage of the newspapers,[6] and since both the newspaper newstand prices and advertising rates were unchanged, despite the lower news-

[4] Data from readily available publications have not been cited. In general, export figures are from *Trade of Canada;* wheat statistics from the Food Research Institute, *Wheat Studies;* Internal (Canadian) series from the Dominion Bureau of Statistics, *Mo. Rev. Bus. Stat.* (since replaced by the *Can. Stat. Rev.*); U.S. statistics from the *Surv. Current Bus.*, the *Fed. Res. Bull.*, and the *Mo. Summary For. Commerce;* British import data from the *Accounts Relating to Trade and Navigation.*

[5] Most of the information on the pulp and paper industry is drawn from J. A. Guthrie, *The Newsprint Paper Industry* (Cambridge, 1941); and contemporary accounts in the *Monetary Times* (Toronto), the *Financial Post* (Toronto), *Editor and Publisher* (New York), and the *Economist* (London).

[6] Newspapers usually maintain a fixed ratio of each issue's advertising to total space. A change in the advertising volume would thus alter the size of the individual issue and therefore the quantity of newsprint per copy. A change in circulation would vary the number of newspapers sold and thus, again, the volume of newsprint consumed. Hence, changes in either affected the publishers' demand for newsprint.

print costs,[7] the drop in newsprint prices resulted only in curtailed revenues for the manufacturers, rather than a jump in sales volume. This was reflected in share prices, the newsprint firms' securities dropping 40 per cent during the period of the price war, while the average of all Canadian industrials rose 30 per cent.

What undoubtedly postponed the downturn at this point was the inflationary influence of the banks. At this time they were pursuing an expansionary policy despite the outflow of gold to the United States; this latter movement was the result of a greatly increased adverse trade balance, as imports rose with increased prosperity at home, producers' goods imports, in particular, responding to expanding investment demands within Canada. Yet, despite this drain on reserves, the banks continued to expand loans and deposits; in part this resulted in lower reserve ratios for the banks, and in part the deficiency was met by increased borrowing from the Dominion government under the Finance Act.[8] This borrowing, in turn, resulted in a gold outflow from the reserves backing the Dominion notes; in January 1929 Canada abandoned the gold standard *de facto* by placing an embargo on gold exports.[9]

Another inflationary influence was the "wheat holdback" in 1928-1929. The 1927-1928 crop had been very good, and prices had declined. As 1928 wore on, however, the outlook for the next crop was not promising. Since it was felt that European millers were dependent on the high-grade Canadian wheat for milling flour, and since it was thought that there would be a shortage of these quality grades, many Canadians believed that a sizable price rise for these particular strains was inevitable.[10] The Wheat Pools, private traders, farmers, millers, and speculators all shared this view. Hence, a holding movement developed in Canada, moving Canadian wheat prices out of line with world prices of competing wheats, the normal premium in the Liverpool market doubling. Much of this holdback, of course, was financed through the Canadian banks.

[7] Actually, some advertising rates were raised during this period. *Cf.* the *Editor and Publisher International Year Book for 1935* (New York, 1935), p. 106.

[8] The method of borrowing and the effects on the banks' reserves were analogous to U.S. member bank borrowing from the Federal Reserve Banks, although at that time the Canadian banks did not have a central authority holding their reserves.

[9] For a more complete story of this episode, see V. W. Malach, "The Mechanism of Adjustment in Canada's Balance of Payments, 1921-9," *Can. Jour. Econ. Pol. Sci.*, Aug. 1952, XVIII, 313-15; C. A. Curtis, "Credit Control in Canada," Canadian Political Science Association *Papers and Proceedings II*, May 1930, especially pp. 109 ff.; and my (unpublished) doctoral dissertation, *Economic Fluctuations in Canada, 1927-1939* (Princeton University, 1950).

[10] This discussion is based on contemporary material, especially in *Wheat Studies* and the *Economist*.

The results were disastrous. During the latter half of 1928 and throughout 1929 there was an almost perfect inverse movement between the premium on Canadian wheat and the percentage of British imports of wheat coming from Canada; the larger the premium, the lower the Canadian share of British orders. This adverse effect on Canadian wheat exports started with the holdback in 1928; in the last quarter of that year Great Britain, the Netherlands, Switzerland, and Belgium started to curtail their purchases of Canadian wheat. Canadian flour exports also lagged, since the main constituent (Canadian-grown wheat) had risen so sharply in price; foreign competitors had turned to cheaper grades. In fact, in protest against the control of sales in Canada, British importers and millers extended a definite buying preference to Argentine and Russian wheat.[11] The resulting decline in exports and increase in stocks of wheat and wheat flour were far more than the Canadians had anticipated.

The curtailment of these exports reacted back on farm purchasing power, and after Christmas 1928 rural spending dropped off.

As the effects of the various deflationary forces cumulated—the decline in wood pulp exports and prices, the newsprint price war, and the wheat holdback—they began to be reflected in total spending. After the first quarter of 1929 bank debits, which had been exceeding the corresponding months of 1928, started to decline. The drop in wheat and wheat flour exports hit steamship and railroad earnings, as well as the textile industry through lessened demand for flour sacks. Both newsprint and wood pulp exports, particularly to the United States, also were below the previous year. As the declines spread, other industries reacted. Pig iron production dropped in March. Construction contracts, which had been running ahead of the previous year, dropped below in April and May 1929.

At the end of March stock prices broke sharply both in Canada and the United States, Canadian prices declining much more. As though touched off by this shock, series after series started to waver or turn down in Canada, and even in the United States a few started to recede. From April on, the chronicle is a dreary repetition of recession in the individual Canadian indices. The downturn was now well under way, to be followed in June by the United States.[12]

[11] *Cf.* H. S. Patton, "The Canadian Wheat Pool in Prosperity and Depression" in W. L. Holland (ed.), *Commodity Control in the Pacific Area* (London, 1935), p. 142; Royal Bank of Canada *Letter*, November 1935, p. 2; *Wheat Studies*, vol. VII, Nov. 1930, p. 20 (note 3) and Dec. 1930, p. 125.

[12] *Cf.* A. F. Burns and W. C. Mitchell, *Measuring Business Cycles* (New York, 1946),

II. *The 1932-1933 Recovery*

The downward movement of the Canadian economy, like that of most of the world, continued almost without interruption for more than the first two years after the 1929 peak. Production and incomes fell, unemployment rose, and the dreary pall of stagnation enveloped the entire country. Since her two main customers—Great Britain and the United States—were depressed, it was inevitable that Canada should be similarly affected.

It was this dependence on two different economies, however, that finally put a bottom to the recession. It will be recalled that each of Canada's two main export groups depended greatly on the demand in one of these countries—wheat and wheat flour on the British demand, wood pulp and newsprint on American demand. While both customers were in the downward phase these two export groups were not prosperous, of course. But with the 1932 upswing in Great Britain,[13] the wheat indices improved, along with those parts of the Canadian economy whose main market was also in Great Britain. Hence, offsetting the continued downward pull of the American market was the upward movement of the British; as a result, the Canadian economy tended to level off in 1932. Then, in the following spring (1933) the American economy turned up sharply, accompanied by Canada. With both the British and American recoveries as supports, the Canadian indices then were, almost without exception, in the revival phase.

Although we have not emphasized the impact on the Canadian balance of international payments, it might be noted that its cyclical behavior also made for a certain degree of maneuverability during the depression period. Because of the importance of producers' goods imports, a recession within Canada would reduce domestic investment sharply, thus tending to cause a drop in imports greater than was developing in her exports (as a result of other countries' recessions), thus improving the current account position. This improvement offset the accompanying drop in the inflow of (mainly American) capital funds, thus averting serious pressure on domestic banking and currency re-

p. 78, and the 30th Annual Report of the National Bureau of Economic Research, *New Facts on Business Cycles* (May 1950), chart 4 (p. 11).

[13] Immediately after her departure from the gold standard British financial policy, fearing inflation, pursued a restrictive program, preventing any inflationary boomlet, such as occurred in the United States in the spring of 1933. The Bank Rate was raised to 6 per cent on September 21, 1931, and was kept at that level until February 18, 1932. Hence, it was not until several months after the ending of the external pressure on the pound sterling that internal recovery was permitted to get under way. For a summary of British policy and events during this period, *cf.* H. Heaton, *The British Way to Recovery* (Minneapolis, 1934), Ch. 4.

serves, minimizing the foreign exchange difficulties that plagued so many other debtor nations.[14]

If we examine the general indices, we can see the decline slackening by 1932. Manufacturing production, which had dropped almost continually from its April 1929 high of 117.7 to 59.0 in April 1932, rose to 72.8 in June, then gradually receded to 62.2 at the end of the year, and to 52.0 by February 1933.[15] Mineral production dropped from 75.8 in April 1929 to 47.3 in August 1932, the depression low, recovering during the remainder of the year. The low for exports (excluding gold) to Great Britain (in terms of Canadian dollars) was reached in 1931, January 1932 exceeding the previous January by almost $2 million, or 25 per cent. Exports to the United States, of course, remained low until the recovery in the spring of 1933.

It will be recalled that in the preceding prosperity warning signals could be detected some two years before the actual downturn. Moreover, these signs of weakness were applicable particularly to the Canadian economy, centering about its own products—wheat and wheat flour, wood pulp and newsprint. No important world event prior to the summer of 1929 influenced significantly the course of Canadian economic activity. In contrast, the 1929-1933 period was one of almost uninterrupted decline, stopped only by external events whose influences were world-wide—the recovery in business activity in the United States and Great Britain, and the resulting revival in Canadian exports to these two. These two developments were powerful enough to reverse the course of Canada's domestic cycle.

The relation of the 1932-1933 cyclical turn in Canada to the movements of the British and American cycles can be seen by examining the foreign exchange movements. In the months following the widespread departures from the gold standard in the autumn of 1931, the British pound declined much more than did the Canadian dollar. Hence, during that period the pound was depreciated in terms of both the Canadian and American dollars, while the Canadian dollar was depreciated in terms of the American dollar; in other words, temporarily, Canada had a competitive exchange position that was advantageous relative to the United States but disadvantageous relative to Great Britain. Yet, in 1932, it was in the British market that Canadian exports started

[14] For a more extended discussion of the external adjustment, *cf.* E. Marcus, "The Cyclical Adjustment Pattern of an 'Open Economy': Canada, 1927-1939," *Econ. Jour.*, June 1952, LXII, 305-17.

[15] 1935-1939 equals 100. Source: *Mo. Rev. Bus. Stat.* This movement was similar to the course of industrial production in the United States. The Federal Reserve Board index declined from its September 1929 high of 116 to 52 in July 1932, rose to 62 in October 1932, then dropped back to 55 by the end of the year and to 54 in March 1933 (1935-1939 equals 100, unadjusted index).

to recover, while shipments to the United States continued declining as a result of the continued drop of economic activity there. The drop of the Canadian dollar in New York, from September 1931 to April 1933, did not counteract the depressing effects of the receding activity in the United States, whereas the British recovery, and accompanying rise in domestic purchasing power, were strong enough to offset the effects of the depreciation of the British pound in terms of the Canadian dollar. On the other hand, in the spring of 1933, the U.S. dollar dropped sharply, in terms of the Canadian dollar (and other currencies); despite this apparent exchange disadvantage to Canada, the accompanying rise in U.S. incomes in response to the various New Deal measures resulted in a sharp rise in Canadian exports to the United States.[16] In both periods, it was the domestic incomes, rather than the foreign exchange price effects, that dominated the movement of Canadian exports.

Coincident with the British recovery the turning point in many Canadian export indices occurred in mid-1932, particularly those for the sterling bloc markets—foodstuffs, nonferrous metals, and automobiles. Because of the particular commodity markets first receiving this stimulus, the geographical distribution of recovery in Canada was initially uneven, the Prairie Provinces (Alberta, Saskatchewan, and Manitoba) experiencing more benefit than Quebec, where the wood pulp and newsprint industries were still suffering as a result of their dependence on the U.S. market. For example, bank debits in the Prairie Provinces in 1932 were only 8 per cent below 1931, whereas in Quebec they were almost 21 per cent lower.

Then, in March 1933, the American recovery began. This aided Canada both directly, because of the increased buying by Americans, and indirectly, the intangible currents of American business psychology spreading northward across the border. This almost immediate reaction can be seen readily in the export statistics. In the first four months of 1933 Canadian [redacted] the United States (excluding gold) were almost 40 per cent below the first four months of 1932; in May-June they were only 3½ per cent less; and in July 1933, 42 per cent higher than in July 1932.

Practically every important Canadian index that had not turned up with the 1932 British upswing recovered in the 1933 American boomlet.[17] The almost unanimous agreement in timing of the American and Canadian series is obvious; only newsprint exports lagged, because

[16] For a somewhat more extended discussion, *cf.* Marcus, "The Cyclical Adjustment Pattern of an 'Open Economy,'" *loc. cit.*, pp. 308-11.

[17] The immediate and widespread influence of the U.S. upturn is seen in the sharp reversal from decline to rise in almost everyone of the forty leading indicators of Canadian economic activity in the months after the start of the New Deal.

American newspaper advertising, and thus newsprint consumption, lagged until the last quarter of the year.[18] In common with most of the world Canada was starting the climb up the business cycle again.

III. *The 1933-1937 Upswing*

During these years Canada enjoyed an upswing, although not back to full employment. The mining industry led the recovery, while wheat was a conspicuous laggard.

The expansion of mining output was paced by gold. The rise in its Canadian dollar price after the 1931 departure from the gold standard while production costs were falling furnished a strong stimulant. Moreover, since Canadian gold was frequently found in conjunction with other metals, production of these others also rose, aided by an expanding British demand for housing, and later for rearmament. Moreover, many mining companies had completed large-scale programs aimed at achieving greater efficiency; these had been initiated before the 1929 depression broke, but the resulting reduction in costs could now be reflected in a quickly increased output.[19]

The partial replacement of wheat exports by the mines' output is shown strikingly in the annual figures in Table I.

TABLE I.—CANADIAN EXPORTS

(Annually; millions of Canadian dollars)

Year	Wheat and Wheat Flour	Percentage of 1928 Exports	Non-monetary Gold[a]	Percentage of 1928 Exports	Selected Nonferrous Metals[c]	Percentage of 1928 Exports
1928[b]	$498	100.0	$ 40	100.0	$ 66	100.0
1933	142	28.5	82	205.0	51	77.3
1934	150	30.1	114	285.0	66	100.0
1935	156	31.3	119	297.5	84	127.3
1936	237	47.6	132	330.0	103	156.1
1937	182	36.5	115	[redacted]	[redacted]	230.3

[a] Newly mined gold.

[b] 1928 rather than 1929 was selected, because of the wheat holdback in the latter year.

[c] Aluminum, copper, lead, and nickel.

[18] This lag of newspaper advertising behind general business activity in the recovery phase was a characteristic commented on by C. V. Kinter, "Cyclical Influences on Newspaper Advertising," *Am. Jour. Econ. Soc.*, Oct. 1947, VII, 88.

[19] This and the following paragraph are a summary of material from the Canadian Dominion Bureau of Statistics reports on various phases of the mining industry; the *Canada Year Book* annual issues; reports by the provincial Bureau of Mines in Ontario and Quebec; annual reports of the leading Canadian mining corporations; the annual issues of *The Mineral Industry*, edited by G. A Roush (New York); and contemporary reports in the *Financial Post*, *Monetary Times*, *Northern Miner*, and *Economist*. The table is based on data in the *Trade of Canada*.

The wheat areas continued to remain depressed as prices remained low and large stocks accumulated, both in Canada and abroad. Intervention by the Dominion government, which had started in 1930, was not sufficiently strong to offset the world-wide depression in the grain trade. Throughout the 'thirties the Canadian Wheat Board dominated the movement of Canadian wheat, selling off stocks gradually, particularly in 1935-1937, as wheat prices recovered.[20]

In a pattern strikingly similar to that before the 1929 turning point, the Canadian recovery ceased before the American cycle reached its peak. Once again there were specific difficulties within the newsprint and wheat sectors that accounted for the turning point within Canada. Canadian wheat and paper indices started to falter several months before the 1937 drop in the United States. The recovery in Great Britain showed signs of hesitation in the later half of 1936, thus ending the upward movement of Canadian exports to that country. Wheat and wheat flour exports were particularly affected.

Meanwhile, in the United States, perhaps as an advance sign of the recession, newspaper advertising ceased to gain at the beginning of 1937. American newsprint production also stopped increasing. Hence, by the early spring of that year, Canadian wood pulp exports to the United States were losing momentum, as had also occurred eight years before.

At the same time, costs in Canada, as well as in the United States, were rising rapidly, tending to make new investment less profitable. The price index for 30 Canadian industrial materials rose 25 per cent from October 1936 to March 1937, more than in the preceding three and a half years. Wholesale prices rose 12 per cent from May 1936 to July 1937, or as much as in the preceding three years. Comparison of raw materials' and manufactured goods' prices is made in Table II.

In general, it can be said that in 1936-1937 raw material prices (*i.e.*, costs) were rising faster than manufactured goods' prices (*i.e.*, selling prices), thus putting pressure on per-unit margins. Wage rates, too, were rising, the 1936 to 1937 increase of 7.4 per cent exceeding that of the entire preceding three-year period (5.8 per cent).

IV. *The 1937-1938 Recession and Recovery*

These various difficulties within the Canadian economy made it vulnerable to the 1937 recession in the United States. However, unlike the situation in 1929, Canada's other foreign markets continued to provide support, as a result of the increasing rearmament programs. For

[20] For a discussion of the wheat situation, *cf.* contemporary accounts in *Wheat Studies* and the *Economist*.

TABLE II.—CANADIAN PRICE INDICES
(1926=100)

	1933 Low	Start of 1936 Rise[a]	Percentage Rise, 1933 to 1936	1937 High	Percentage Rise, 1936 to 1937
Field Origin					
Raw materials	34.5[b]	55.0	59.4	91.0	65.5
Manufactured	65.2	70.3	7.8	87.0	23.8
Animal Products					
Raw materials	55.0	70.1	27.5	84.9	21.1
Manufactured	58.8	70.0	19.0	79.0	12.9
Forest Products					
Raw materials	64.4	73.6	14.3	98.0	33.2
Manufactured	55.9	55.9	0.0	70.2[c]	25.6
Mineral Products					
Raw materials	74.8	78.8	5.3	88.8	12.7
Manufactured	83.4	84.8	1.7	93.1	9.8

[a] For more than a year, following the 1933–1934 upswing, wholesale prices had remained fairly stable. These eight groups then resumed their rise at varying months in 1936, the particular month for the start having been selected after inspection of the charted time series.

[b] December 1932.

[c] January 1938.

For descriptions of the indices, see the Dominion Bureau of Statistics' annual series, *Prices and Price Indexes*.

example, in Great Britain, despite the recession there, construction and heavy goods industries held up, thus sustaining the demand for Canadian nonferrous metals.[21] As a result, the decline in the level of economic activity within Canada was less, proportionately, than that in the United States. Although the latter's exports were also aided by the overseas rearmament outlays, the lesser rôle played by foreign trade made the stimulating effects much less intense.

The support provided by the Canadian mining industry made it, in the words of an *Economist* correspondent, "one of the chief buttresses of Canada's economy."[22] The value of its output was down less than 5 per cent from 1937 to 1938, while employment actually rose. Of the main minerals, physical output rose from 1937 to 1938 for gold, copper, lead, zinc, petroleum, and natural gas. Silver, salt, and gypsum decreased less than 5 per cent and only asbestos showed a decrease larger than 10 per cent.

The lesser impact on Canada is shown by the production indices in Table III.

In contrast to the preceding (1929-1933) depression, recovery came

[21] J. A. Brown, "The 1937 Recession in England," *Harvard Bus. Rev.*, 2, winter 1940, XVIII, 254.

[22] July 16, 1938, p. 120.

quite quickly. The American pump-priming policy plus European rearmament soon brought both Canada and the United States into the upward phase of the cycle for the remainder of the period before the outbreak of the war. Many British armanent orders were placed with Canadian firms, particularly in the iron and steel industry, including contracts for the construction of new plant facilities.

With the revival of U.S. industrial output and incomes, Canadian exports to the United States picked up, increasing almost 70 per cent from February to November 1938. Exports to Great Britain almost

TABLE III.—CANADIAN AND UNITED STATES PRODUCTION INDICES
(1935–1939 = 100)

	1937 High	1937–1938 Low	Percentage Drop
Manufacturing production			
Canada	118.4	89.5	−24.4
U.S.	123	79	−35.8
Producers' goods—Canada	115.2	94.8	−17.7
Durable manufactures—U.S.[a]	135	66	−51.1
Machinery—U.S.	134	75	−44.0
Consumers' goods—Canada	114.9	91.4	−20.5
Non-durable goods—U.S.	114	88	−22.8

[a] Includes transportation—automobiles, aircraft, railroad cars, etc.

doubled from April to October 1938. The main nonferrous metals—aluminum, copper, lead, and nickel—now accounted for 15 to 20 per cent of total Canadian exports, double the proportion of the pre-1930 years. Wheat and wheat flour exports recovered, too, both because of the general rise in incomes throughout the world, and because of stockpiling programs in anticipation of war.

Hence, with the European armament programs sustaining exports to that area, and with the additional support afforded by the revival in the United States, Canadian indices turned up, soon recovering most of the ground lost in 1937-1938. From the 1938 low to the highest succeeding month before the outbreak of World War II, Canadian manufacturing output rose 24 per cent; mining output rose 35 per cent, to a level 10 per cent above the 1937 high. The producers' goods industries also stepped up production sharply, with an increase of 22 per cent, to equal the 1937 high, partly as a result of the tripling of new private construction contracts awarded. Although a level of full employment was not attained until the wartime period—even the 1937 high had not reached that point—it was still a decidedly upward movement. With the outbreak of hostilities, of course, the indices were to register much greater gains.

V. *Summary and Conclusion*

One factor which should be stressed is the importance of events and tendencies which were of particular concern to the Canadians, or to some one Canadian activity, yet which, in themselves, were not major events of international significance. The pressure by American purchasers of newsprint for price cuts in 1928, on the surface, was a purely local problem, hardly important enough to count, as a cycle determinant. Yet, because of its occurrence at a time when the Canadian newsprint industry had expanded so greatly as to put itself in a vulnerable position, the American publishers were able to seize the opportunity to "break" the existing schedule of prices. This, in turn, by causing an important segment of the Canadian economy to suffer, helped to bring about the earlier turn in the Canadian cycle in 1929.

In fact, one is struck by the importance of the economic relationships between particular segments of the economy, especially for the explanation of the upper turning point. It has usually been this intertwining of relationships that has served to explain the specific movements analyzed. Thus in 1929 it was not the succession of events leading up to the world-wide collapse in the autumn, but the developments centering around the expected poor wheat harvest within Canada—and the resulting wheat holdback—that explain the drop in Canadian exports and the accompanying adverse balance and foreign exchange difficulties. True, Canada was also caught up in the same forces that were working on the other countries of the world, but these were not the dominating factors directly determining the Canadian turning point. We thus come back to what have been termed "real causes," such as D. H. Robertson offered as possible explanations of the cycle—changes in overseas demand as a result of the vagaries of harvests, war, fashion, etc.[23] The unity of international markets, the interconnections as a result of international specialization, all the innumerable ties that connect the supplier with his customers, become the logical answer for the analyst seeking to determine the cause and effect of movements in the level of activity of related trades.

To a certain extent this relative independence from world cyclical events had an element of the fortuitous. The fortunate possession of undeveloped mineral resources which came within the range of efficient operating costs at just the appropriate time helped make possible the beginning of the upswing in 1932-1933. What would have happened to the Canadian economy if its vast reserves of unmined gold had not existed, as well as the accompanying expansion of the base metals, is

[23] *Cf. e.g., A Study of Industrial Fluctuation* (London, 1915), especially pp. 71-73, 148-49, 181-82.

not difficult to imagine. The wheat economy was depressed; the newsprint industry was plagued with low prices, overproduction, and widespread bankruptcies; neither of these could have provided the necessary stimulus. Certainly, Canada was fortunate in possessing these alternative natural resources at just the right stage of development to come into production on a tremendously enlarged scale.

For the analysis of the upswings, it has been the income levels of the main Canadian customers—the United States and Great Britain—rather than price movements that have been important. This was most strikingly illustrated during the 1931-1933 period of currency disturbances, when Canadian exports rose to those countries whose internal activity was improving, even though their currencies had depreciated relative to the Canadian dollar, and exports suffered if the consuming country's activity were decreasing, even though its currency had appreciated in terms of the Canadian dollar.

During the twelve years studied price was of some importance in determining the demand for Canadian products—for example, too high a price for wheat in 1929 resulted in the loss of much of her overseas market. The significance of the influence of price was reduced, however, by the fact that the leading Canadian exports were governed by a demand that was comparatively inelastic; for newsprint, the main destination was the American newspaper industry, where stability of the newsstand price and advertising rates prevented any variation in the cost of newsprint from being reflected in the final price to the reader, thus nullifying any effects through derived demand. Similarly, most of the outlets for Canadian nonferrous metals were also characterized by an inelasticity of demand. Much of this demand, particularly in the late 'thirties, was in the growing rearmament progams; here the volume purchased depended on the size of the country's budgetary appropriation, rather than the price of the materials required. Moreover, since Canada was a low-cost producer of most of these minerals, further reduction of the sales price would not have increased her relative advantage, and thus her share of the market, since she already had a commanding position. As for wheat, other than the importance of the relative price as compared with competing wheats, the inelasticity of demand for such foodstuffs also worked to minimize the influence of price variations.

In brief, Canada was free to depress herself in advance of the world turning point, but she could not recover before her main foreign markets also enjoyed an upswing.

SRAFFA'S *RICARDO*[1]

By GEORGE J. STIGLER*

Ricardo was a fortunate man. He lived in a period—then drawing to a close—when an untutored genius could still remake economic science. He lived in a nation where two great problems, inflation and free trade, gave direction and significance to economics. And now, 130 years after his death, he is as fortunate as ever: he has been befriended by Sraffa—who has been befriended by Dobb.

Keynes told us, in 1933, that Sraffa, "from whom nothing is hid," would give us the full works of Ricardo within the year.[2] The truth of the first part of the statement had as its cost the falsification of the second, and it has been a splendid bargain. For Sraffa's *Ricardo* is a work of rare scholarship. The meticulous care, the constant good sense, and the erudition, make this a permanent model for such work; and the host of new materials seem to suggest that Providence meets half-way the deserving scholar. The Royal Economic Society, his patron, displays its justifiable pride in the outcome of this venture by the excellence of the presentation of the work.

I shall not attempt any general estimate of Ricardo's work. It does not seem called for: these nine volumes often amplify and sometimes modify our understanding of his doctrines, but they do not change it in essentials. This is desirable as well as inevitable: it would be high tragedy if Ricardo had been forced to wait more than a century before revealing his ideas. Moreover, there is little point in the conventional "estimates" of past economists. One can indeed debate the desirability of the influence Ricardo exerted on economics, but his vast influence is undeniable and the debate serves no clear purpose beyond exciting his heirs and intellectual assignees. I doubt whether dead professors should be graded—but for those who must have grades, I think Ricardo's policy recommendations were profoundly good but his theory was not of the highest quality.[3]

Be that as it may, I shall restrict my comments to three subjects: the quality of the edition; Mill's influence on Ricardo; and Ricardo and Malthus on Say's Law.

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[1] Reflections on *The Works and Correspondence of David Ricardo,* edited by Piero Sraffa with the collaboration of M. H. Dobb, in nine volumes (Cambridge, Eng. and New York, 1952). References to volume and page will be by roman and arabic numbers respectively.

[2] *Essays in Biography* (London, 1933), p. 138.

[3] And T. W. Hutchison flunks him; "Some Questions about Ricardo," *Economica* (1952), XIX, 415-32.

I. *The Quality of the Edition*

Sraffa's edition seems to breathe precision, so it was only with difficulty that I brought myself to test a small portion of it. The test consisted of a comparison of roughly one-tenth of the paragraphs of his text of the *Principles* with the first edition.[4] The impression of precision is well-founded; I found only one large error.[5] Any economist who does not appreciate how extraordinary such accuracy is, should spend an hour or two checking published quotations.

Aside from the introduction to Volume I, Sraffa's editorial prefaces and notes serve an informative, rather than an interpretive, function. This severe self-abnegation was wise: the facts are relatively timeless but even the best analysis of a predecessor will change with the interests and knowledge of the science. The editorial notes are superb. They seem unbelievably omniscient; they are never obtrusive or pedantical; and they maintain unfailing neutrality. Their presence not only clarifies much of Ricardo's work but also provides a vast fund of information on the economics of the period.

Others may be as uncomfortable as I at undiluted praise, and perhaps one should criticize Sraffa for the insertion of an erroneous "not" (VIII, 359) or argue the irrelevance of the splendid tale of Mr. ——— (III, 427 ff.) in order to emphasize more subtly the superlative quality of the scholarship. But usual rules must bow to unusual events: here is a task that need not be performed again.

II. *Mill and Ricardo*

Ricardo's correspondence opens in 1810, a year after he made the public plunge into economics, and closes with the sad letters of his friends describing his death in 1823. In the former year he was 38, Malthus was 44, Say was 43, James Mill was 37, McCulloch was 31, and John Mill, still busy with Greek, was 4.

In the few letters between Say and Ricardo, the Frenchman seems soft and muddled in comparison with the tough-minded Ricardo. Say's approach was fundamentally much more modern than that of his English contemporaries, but he lacked the intellectual power to develop it satisfactorily. The correspondence makes McCulloch out a less servile and uncritical disciple than legend would have him; for example, he sturdily opposed, although not on the best grounds, Ricardo's mistaken theory of the effects of machinery (fixed capital) on wages (VIII, 381 ff.). The many letters to Trower, an intelligent stockbroker friend of Ricardo's, provide exercise in exposition to Ricardo and relaxation to the reader. Trower was an amiable man, and one imagines with compassion his reception when he unsuccessfully tried to tell a rural audience,

[4] Sraffa will be pleased to learn that his conjecture as to how two Chapter VIII's appeared in the first edition is verified (I, xxviii). The copy in the Columbia library has an uncorrected page 220, which continues with the opening passages of the second Chapter VIII; the corrected pages 219-22 were bound in the index.

[5] Sraffa fails to report, I, 149, line 24, that "they" was "we" in the first edition.

at a time when the price of corn was catastrophically low, that its troubles were augmented by decreases in agricultural taxes (IX, 165n.).

The major interest of the correspondence lies in the letters of Mill and Malthus, most of which have not previously been published. The Mill letters illuminate his rôle in directing Ricardo's career—they are unimportant on matters of economics since Mill was inactive in economics during most of the period. The Malthus letters present the debate over a large number of scientific differences that separated the two leading English economists of the period. We begin with Mill.

Mill had come to London in 1802 to make his way as a writer—a move that surely improved the Scotch Presbytery as well as the literary journals of London.

> The extent of his acquired knowledge and original thinking, when he left Scotland at the age of twenty-nine, will be judged by what he was able to do in the next few years. He kept back from the aspiring Scotchman's venture upon London, until he had attained an unusual maturity of intellectual power; while possessed of good ballast in the moral part. Moreover, we are to conceive of him as a youth of great bodily charms. One of my lady informants spoke of him with a quite rapturous admiration of his beauty. His figure and proportions were fine; the short breeches of the time showed a leg of perfect form. His features beamed with expression. Nothing was wanting that could prepossess people's favourable regards.[6]

Already in 1804 he wrote a first, very poor pamphlet on foreign trade,[7] and in 1808 a second, very able pamphlet, *Commerce Defended,* so he was already an economist of sorts when his acquaintance with Ricardo began.

Ricardo had a great respect for Mill, and so should we. Mill had an integrity, a strength of purpose, and a public spiritness that ordinary men can only admire. He married in 1805, apparently not very wisely, and the twenty greatest years of his professional life were devoted to earning a livelihood as a journalist and editor. He lived partly on the bounty of Bentham, a crotchety landlord. Yet over these years he found the time and energy to educate his oldest son in a manner unparalleled in written history, and to write his famous *History of British India.*

Mill was a man of considerable logical power, wanting only that mysterious gift of insight to achieve greatness. His will could shatter Sheffield steel, and his opinions were no softer;—here is an example:

> We are as little able to humble Bonaparte, as Bonaparte is to humble us. There is hardly any human event that is less within the reach of chance than the humiliation of Bonaparte by the prolongation of our hostilities. This is a truth in which all men appear at last to be agreed; it is so evident that it seems to defy objection.[8]

[6] A. Bain, *James Mill* (London, 1882), p. 35.

[7] *An Essay on the Impolicy of a Bounty on the Exportation of Grain.*

[8] *Commerce Defended* (London, 1808), p. 128.

The portrait of the cold machine of a man drawn in his son's *Autobiography* is no doubt a fair-minded picture, but reflects also the serious human shortcomings of the artist. The letters show a little more of the human being, although the gallantries to Ricardo's womenfolk are most ponderous. In plain fact, I disagree with Bain: something was lacking in Mill to prepossess our favorable regards. But let us get on to Ricardo.

In the late summer of 1815, Mill began to press for a treatise. Ricardo was settled on his estate, Gatcomb Park, and now "sufficiently rich to satisfy all my desires, and the reasonable desires of all those about me" (VI, 262), when Mill's campaign began.

> When I am satisfied, however, that you can not only acquire that reputation [for talents, and profound knowledge of an important subject], but that you can very greatly improve a science on which the progress of human happiness to a singular degree depends; in fact that you can improve so important a science far more than any other man who is devoting his attention to it, or likely to do so, for Lord knows how many years—my friendship for you, for mankind, and for science, all prompt me to give you no rest, till you are plunged over head and ears in political economy.
>
> I have other projects upon you, however, besides. You now can have no excuse for not going into parliament. . . . (VI, 252.)

Within a week Ricardo agreed to make the attempt:

> Whether it be art in you, knowing how effectual the desire of distinction is in calling forth exertion and talent, to persuade me that I have certain capabilities, in order by the reward which you display in such glowing colours, and to which I am feelingly alive, to stimulate me to exertion and put my power to the test,—or whether you are really satisfied that I have those capabilities I am not quite sure,—but of this I am certain that if the latter is your opinion you are completely deceived. . . . The experiment shall however be tried,—I will devote as much time as I can to think and write on my favorite subject. . . . (VI, 262-63.)

The letters now unfold the picture of a strict but kindly master dealing with a brilliant but unconfident and procrastinating pupil. There are detailed instructions on the high art of composition (VI, 329, 339),—and even on the way to organize one's time (VI, 340). Ricardo periodically despairs, as in a letter to Trower: "Thus you see that I have no other encouragement to pursue the study of Political Economy than the pleasure which the study itself affords me, for never shall I be so fortunate however correct my opinions may become as to produce a work which shall procure me fame and distinction" (VI, 315; also VII, 54, 89). But the taskmaster just as often revives confidence: "For as you are already the best *thinker* on political economy, I am resolved you shall also be the best writer" (VI, 340).

By the fall of 1816 Mill is receiving portions of the manuscript, and his reaction could not fail to encourage any author:

> My opinion may be given in very few words; for I think you have made

> out all your points. There is not a single proposition the proof of which I think is not irresistible. . . .
>
> You have, therefore, made great progress toward the production of a most admirable book. The style also, is really excellent. . . . And easy then for you to put the last hand to a work which will gain you immortal honour (VII, 98-99).

Ricardo expresses his indebtedness in generous terms:

> How very encouraging your letter is! . . . If I am successful in my undertaking it will be to you mainly that my success will be owing, for without your encouragement I do not think that I should have proceeded, and it is to you that I look for assistance of the utmost importance to me—the arranging the different parts, and curtailing what may be superfluous (VII, 100-01).

In the spring of 1817 the *Principles* appeared, but Ricardo was given no rest. He must have shivered at Mill's wish to have a cottage within a couple of miles of Gatcomb Park: "how I would keep you to it!" (VII, 184). Ricardo again hesitates at Mill's bold plans:

> In the first place I am not very persevering, unless the object for which I work is steadily before my eyes.—I have all the disadvantages too of a neglected education, which it is now in vain to seek to repair. It would be wise in me to stop where I am and not like a desperate gamester venture my gains to the fearful odds to which they are exposed. My mind often misgives me about the Parliamentary scheme, and I think if you knew me as well as I know myself you would advise me against it (VII, 190).

Such excuses were to Mill mere literary lace:

> Which of our *educated* sparks has written such a book as yours? (VII, 196).
>
> You are now, beyond all dispute at the head of Political Economy. Does not that gratify your ambition? And who prophesied all this? Tell me that! And scolded you on, coward that you are? Tell me that! (VIII, 10).

And so, in the fall of 1818 the seat in Parliament is arranged, and Ricardo is instructed to write political discourses as practice for his rôle of legislator.

Should we take these letters at face value and credit Mill with the existence of Ricardo's treatise? I do not know. We must recall that Ricardo wrote the two pamphlets on the bullion controversy and the *Essay* (1815) without apparent intervention by Mill, and the *Proposal* (1816) is due chiefly to Pascoe Grenfell's solicitation. Interest, leisure, and ambition supported the writing of the *Principles*. Nor is there any evidence that intellectual humility was an obstacle to publication for Ricardo. He never deferred to the authority of Malthus, Say, or even Smith; it is always his literary accomplishments, and never his beliefs, for which he apologizes (*e.g.*, VII, 140). The apologies were justified, and a comparison of the early pamphlets with the *Principles* reveals precious little progress in this respect for which Mill might claim credit. Perhaps Ricardo had a phobia on literary composition

that it took a Mill to overcome, but perhaps also Mill, with all his fussing and prodding, merely hastened the work.

I shall not follow any farther the schemes of the Scotch impresario, but before we leave him, let us hear Ricardo's response to still another plan:

> This scheme would not contribute to my happiness. You are mistaken in supposing that because I consider life on the whole as not a very desirable thing to retain after 60, that therefore I am discontented with my situation, or have not objects of immediate interest to employ me. The contrary is the case—I am very comfortable, and am never in want of objects of interest and amusement. I am led to set a light value on life when I consider the many accidents and privations to which we are liable. . . . No one bears these serious deprivations with a better temper than myself, yet I cannot help anticipating from certain notices which I sometimes think I have, that many more await me. I have not I assure you seriously quarreled with life,—I am on very good terms with it, and mean while I have it to make the best of it, but my observation on the loss of esteem and interest which old people generally sustain from their young relatives . . . convinces me that general happiness would be best promoted if death visited us on average at an earlier period than he now does (VIII, 253).

Ricardo got both wishes: he did not become a director of the East India Company; and within three years he was dead.

III. *Ricardo and Malthus: Say's Law*

Malthus was already the celebrated author of the *Essay on Population* and the only professor of political economy in England when his friendship with Ricardo began. They must have been uncommonly fond of each other to persist in an intimacy despite great scientific and intellectual differences and despite their rivalry for the dominance of English economics.

Malthus had one wondrous gift, the intuition to bring to an explicit level deep problems of economic life. His claims are vast: he was an independent discoverer of the "principle" of population; of the theory of rent; and of the fact of a relationship between saving and the level of economic activity. And he had one great weakness—he could not reason well. He could not construct a theory that was consistent with either itself or the facts of the world.

The correspondence should perhaps give us occasion for despair. The leaders of the science, honorable men seeking earnestly for truth, could hardly ever resolve a difference after the most protracted exchanges, and the pages on pages of dreary repetition of arguments tells us again how odd an instrument the human mind is. It would be admirable training, and in more than economics, for our graduate students to write analyses of one of these disputes.

We could follow their early exchanges over the theory of profits or their final dispute over the measure of value, but most readers will probably prefer a discussion of the controversy over what is called Say's Law. This choice is commended by its impartiality, for neither man held an enviable position.

J. B. Say first presented his law of *débouchés,* without fanfare or details,

in 1803. Each individual specializes in production, and the surplus of his product over his needs is exchanged for the surplus products of others.

> This shows, I believe that it is not so much the abundance of money, but rather the abundance of other commodities in general, that facilitates sales. . . .
>
> In this double exchange, money fills only a transitory function. . . . As a result, when a nation has too much of one kind of product, the way to dispose of it is to produce another kind.[9] [my translation]

Without elaboration or application this theory could mean little or much; a theory draws much of its content from its enemies.

Mill presented a similar theory in *Commerce Defended;* it is uncertain whether he was an independent discoverer.[10] One may say that if Say invented the weapon, Mill was the first to slay a duck. The duck was William Spence, a physiocrat, who argued, *inter alia,* that the expenditure of landlords on luxuries was essential to maintain the markets for agricultural produce (and inferentially, all markets). Mill refuted this argument by showing that savings which were invested would continue to provide a demand for the services of the "sterile" groups.[11]

Mill went on to dispute a notion of the *Economistes* that "there is only . . . a market for a given quantity of commodities, and if you increase the supply beyond that quantity you will be unable to dispose of the surplus."[12] Mill was led to state the law of markets:

> But if a nation's power of purchasing is exactly measured by its annual produce, as it undoubtedly is; the more you increase the annual produce, the more by that very act you extend the national market, the power of purchasing and the actual purchases of the nation. Whatever be the additional quantity of goods therefore which is at any time created in any country, an additional power of purchasing, exactly equivalent, is at the same instant created; so that a nation can never be naturally overstocked either with capital or with commodities; . . .[13]

Mill's statement was different from Say's in one respect: he explicitly introduced the condition that the composition of output be adapted to the tastes of consumers and investors.[14]

[9] *Traité d'Économie Politique,* 1st ed. (Paris, 1803), I, 153, 154; see also II, 361-63.

[10] He made no claims of originality and he was already acquainted with Say's book (see *Commerce Defended* [London, 1808], p. 76 n.), but also he did not attribute the doctrine to Say.

[11] *Ibid.,* pp. 68ff. Mill argued parenthetically that the savings would be spent more rapidly than the portion of income reserved for consumption; *ibid.,* pp. 76-77.

[12] *Ibid.,* p. 80.

[13] *Ibid.,* p. 81.

[14] "All that here can ever be requisite is that the goods should be adapted to one another; that is to say, that every man who has goods to dispose of should always find all those different sorts of goods with which he wishes to supply himself in return." *Ibid.,* pp. 82-83, also p. 85.

Ricardo became acquainted with Mill through this pamphlet,[15] and he embraced Mill's version without reservation. In fact Ricardo went considerably beyond the law in his denial that the quantity of money could have any influence on real output. He was called upon in late 1810 to referee for possible publication a manuscript of Bentham's. Bentham made much of the point that if an increase in the stock of money were given to the productive classes (entrepreneurs), they would bid up prices (thus imposing forced savings on fixed income groups) but the amount of investment would be increased. Ricardo commented:

> That money is the causes [sic] of riches has been supported throughout the work and has in my view entirely spoiled it (III, 318).
>
> An augmentation of money in all cases operates to the disadvantage of some and the advantage of others,—it will neither accelerate nor retard the growth of real riches (III, 325).

Ricardo's objections were fundamentally empirical: the lag of wages behind prices would be of only "momentary duration" (III, 319); and it was "mere speculation" whether entrepreneurs would save more of a given real income than the fixed income recipients (III, 333; also VI, 15-16). His empirical judgments, however, were excessively dogmatic, and he treated his conclusion as if it were as certain as an analytical theorem. His objections considerably delayed the publication of Bentham's essay.[16]

Within a few months Ricardo made this position public, in the *High Price of Bullion* (III, 120-23), and at the same time disputed the possibility of a general glut. Malthus, in reviewing various pamphlets (including both of Ricardo's) on the bullion controversy, dissented from Ricardo's argument that premiums on foreign currencies are due only to overissue of currency. If there is a crop failure, the exchange might move adversely to a country when it imported corn because "the prices of commodities are liable to general depressions from a glut in the market."[17] Ricardo restated Mill's law, with characteristic vigor:

> No mistake can be greater than to suppose *that a nation can ever be without wants for commodities of some sort*. It may possess too much of one or more commodities for which it may not find a market at home . . . but no country ever possessed a general glut of all commodities. It is evidently impossible. If a country possesses every thing necessary for the maintenance and comfort of man, and these articles be divided in the proportions in which they are usually consumed, they are sure, however abundant, to find a market to take them off (III, 108).

Malthus soon sought out Ricardo, and henceforth the controversy continued in their correspondence.

[15] J. S. Mill, *Principles of Political Economy*, Ashley ed. (London, 1929), p. 563.

[16] It is now to appear in Volume III of Stark's edition of *Bentham's Economic Writings*.

[17] "Publications on the Depreciation of Paper Currency," *Edinburgh Review*, No. 34 (Feb. 1811), p. 345.

During 1814 and 1815, when Malthus and Ricardo were publishing highly incompatible pamphlets on the corn laws, the former expressed more openly his scepticism of Mill's law.

> In short I by no means think that the power to purchase necessarily involves a proportionate will to purchase; and I cannot agree with Mr. Mill in an ingenious position which he lays down in his answer to Mr. Spence, that in reference to a nation, supply can never exceed demand. A nation must certainly have the power of purchasing all that it produces, but I can easily conceive it not to have the will. . . . It is not merely the proportion of commodities to each other but their proportion to the wants and tastes of mankind that determines prices (VI, 132).

Ricardo would not admit the possibility of a lack of desire:

> I go much further than you in ascribing effects to the wants and tastes of mankind,—I believe them to be unlimited. Give men but the means of purchasing and their wants are insatiable. Mr. Mill's theory is built on this assumption. It does not attempt to say what the proportions will be to one another, of the commodities which will be produced in consequence of the accumulation of capital, but presumes that those commodities only will be produced which will be suited to the wants and tastes of mankind, because none other will be demanded (VI, 148).

Malthus did not deny categorically the insatiability of human wants, nor has any married economist since his time, but he repeatedly argued that a taste for luxuries developed only slowly (VI, 155). It is difficult to see why a lack of wants would lead to a glut of markets, however, since men so constituted would simply not produce in excess of their desires and any surplus of productive capacity would be devoted to indolence—the classical economists' word for leisure.[18]

J. B. Say dealt more elaborately, but not much more precisely, with the law of markets in the second edition of the *Traité* (1814).[19] His formulation was essentially a truism: Assume that money receipts are always promptly spent; then an offer of one commodity is always an implicit demand for another.[20] This truism has properly been labeled Say's Identity. Say goes beyond this truism, or contradicts it, when he asserts that some commodities

[18] We find Malthus seriously confused on the nature of income. He insisted that the "true question" was whether prices would fall if output increased greatly, income remaining constant, and would not accept Ricardo's argument that income inevitably rose under this assumption (VI, 142, 148, 155-156).

[19] *Traité d'Économie Politique*, 2d ed. (Paris, 1814), Vol. I, Ch. 15.

[20] "Il est bon de remarquer qu'un produit créé offre, *dès cet instant*, un débouché à d'autres produits pour tout le montant de sa valeur; car tout produit n'est créé que pour être consommé, soit reproductivement, soit improductivement, et même pour être consommé le plutôt possible, puisque toute valeur qui attend, fait perdre à celui qui en est actuellement le possesseur, l'intérêt de cette attente; le marchand a soin de ne pas avoir des marchandises qui doivent rester en magasin, et le consommateur a soin de ne pas en acheter très-long-temps avant le moment d'en faire usage. Un produit est donc toujours, autant que chacun peut, destiné à la plus prompte consommation. Du moment qu'il existe, il cherche donc un autre produit avec lequel il puisse s'échanger" (*Ibid.*, pp. 147-48).

lack a market because insufficient amounts of other commodities are being produced,[21] but he does not introduce any conditions (such as rigid prices) which would bring such a disequilibrium about.

When Ricardo came to write the *Principles,* he developed the law of markets along Mill's line (I, 289ff). He too had each recipient of money spend it promptly; "he would not lock it up in a chest" (I, 291). But he asserted that no matter how large the accumulation of capital, all commodities could be sold for prices equal to their costs of production provided the commodities suited consumers' tastes:

> There cannot, then, be accumulated in a country any amount of capital which cannot be employed productively, until wages rise so high in consequence of the rise of necessaries, and so little consequently remains for the profits of stock, that the motive for accumulation ceases (I, 290).
>
> Too much of a particular commodity may be produced, of which there may be such a glut in the market, as not to repay the capital expended on it; but this cannot be the case with respect to all commodities; . . . (I, 292).
>
> It follows then from these admissions that there is no limit to demand—no limit to the employment of capital while it yields any profit, . . . (I, 296).

In this form the law of markets is no longer a truism, it is the proposition that general equilibrium of the economy, with prices equal to costs (including "profits"), is compatible with any level of real income. It would be more appropriate to call this the Mill-Ricardo Law than Say's Law.

Ricardo marred this theory by making a concession to Malthus:

> There is only one case, and that will be temporary, in which the accumulation of capital with a low price of food may be attended with a fall of profits; and that is, when the funds for the maintenance of labour increase much more rapidly than population;—wages will then be high, and profits low (I, 292-93).

This is consistent with his theory, but he continues:

> If every man were to forego the use of luxuries, and be intent only on accumulation, a quantity of necessaries might be produced, for which there could not be any immediate consumption. Of commodities so limited in number, there might undoubtedly be a universal glut, and consequently there might neither be demand for an additional quantity of such commodities, nor profits on the employment of more capital. If men ceased to consume, they would cease to produce (I, 293).

The concession is mistaken: if all luxuries were abandoned for savings, there would be no piling up of necessaries, and for that matter their quantity might not increase at all. The output of fixed capital would rise as that of luxuries fell.

We should note that Ricardo did not interpret his law of markets as exclud-

[21] *Ibid.*, pp. 148-50.

ing the possibility of general commercial distress. On the contrary, he devoted a chapter (19) to Sudden Changes in the Channels of Trade, which he believed could for a time occasion widespread distress. Beginning in 1815, however, he made a series of predictions that prosperity would soon come to England (*e.g.*, VI, 232, 345; VII, 49, 170-71; etc.). The prediction was continuously wrong, and it was no compliment to his intelligence that after 1820 he blamed the distress on the abundance of harvests.

The controversy reached a climax with the publication of Malthus' *Principles* (1820). Malthus' theory has been praised lavishly in recent times, but it does not contain any germs of a theory of underemployment equilibrium. We may state with confidence that it does not turn on hoarding: "No political economist of the present day can by saving mean mere hoarding; . . ."[22] In fact his theory is entirely nonmonetary in nature, and the prominence given to a footnote on the importance of money is hard to explain and impossible to justify.[23]

The fundamental argument is expressed as follows:

> It is undoubtedly possible by parsimony to devote at once a much larger share than usual of the produce of any country to the maintenance of productive labour; and it is quite true that the labourers so employed are consumers as well as unproductive labourers; and as far as the labourers are concerned, there would be no diminution of consumption or demand. But it has already been shewn that the consumption and demand occasioned by the persons employed in productive labour can never alone furnish a motive to accumulation and employment of capital; and with regard to the capitalists themselves, together with the landlords and other rich persons, they have, by the supposition, agreed to be parsimonious, and by depriving themselves of their usual conveniences and luxuries to save from their revenue and add to their capital. Under these circumstances, I would ask, how is it possible to suppose that the increased quantity of commodities, obtained by the increased number of productive laborers, should find purchasers, without such a fall of price as would probably sink their value below the costs of production, or, at least, very greatly diminish both the power and the will to save.[24]

This theory is wrong. An amount of savings is matched by an amount of capital goods, and the act of saving need exert no downward pressure on the

[22] *Principles of Political Economy* (London, 1820), p. 32.

[23] The footnote, which has no relevance to the text, is:

Theoretical writers in Political Economy, from the fear of appearing to attach too much importance to money, have perhaps been too apt to throw it out of their consideration in their reasonings. It is an abstract truth that we want commodities, not money. But, in reality, no commodity for which it is possible to sell our goods at once, can be an adequate substitute for a circulating medium, and enable us in the same manner to provide for children, to purchase an estate, or to command labour and provisions a year or two hence. A circulating medium is absolutely necessary to any considerable saving; and even the manufacturer would get on but slowly, if he were obliged to accumulate in kind all the wages of his workmen. . . . (*Ibid.*, pp. 361-62 n.).

[24] *Ibid.*, pp. 352-53 (also II, 301-03).

prices of consumption goods. Malthus' error arises from his assumption that capital formation takes the form only of accumulating the necessaries of labor, *i.e.*, all capital is circulating capital.

Ricardo wrote a critique of the *Principles* at McCulloch's request, and a fair share of it is devoted to the theory of gluts. Ricardo accepts Malthus' theory, with one important correction. If saving leads to a large accumulation of necessaries (Ricardo also improperly identifies capital with circulating capital), which is not accompanied by a corresponding increase of population, wages will rise; Malthus on the contrary argues that wages will fall.[25]

> But if a great quantity of commodities will command little labour, every labourer will have the power to consume a great quantity of commodities. The will to consume exists wherever the power to consume is. Mr. Malthus proves that this power is not annihilated but is transferred to the labourer. We agree with him and say wherever the power and will to consume exists there will necessarily be demand (II, 311).

Malthus fends this attack by introducing rigidity of wages: "We know from repeated experience that the money price of labour never falls till many workmen have been for some time out of work" (IX, 20). Ricardo finds this argument without merit: "I know no such thing, and if wages were previously high, I can see no reason whatever why they should not fall before many labourers are thrown out of work" (IX, 25). Malthus did not pursue this argument.

It is a question of words whether rapid capital accumulation, leading to high wages and low profits, should be said to create a glut; certainly all markets still may be in competitive equilibrium, and no commodity need sell for less than cost. Whatever its name, Ricardo admits that this situation may lead to a cessation of capital accumulation, until the increase of population lowers wages and restores profits.

> Mr. Malthus asks "how is it possible to suppose that the increased quantity of commodities, obtained by the increased number of productive labourers should find purchasers, without such a fall of price as would probably sink their value below the cost of production, or, at least, very greatly diminish both the power and the will to save? [''] To which I answer that the power and the will to save will be very greatly diminished, for that must depend upon the share of the produce allotted to the farmer or manufacturer. But with respect to the other question where would the commodities find purchasers? If they were suited to the wants of those who would have the power to purchase them, they could not fail to find purchasers, and that without any fall of price (II, 303-04).

> What I wish to impress on the readers mind is that it is at all times the bad adaptation of commodities produced to the wants of mankind which is the specific evil, and not the abundance of commodities (II, 306).

This concession pertains only to rapid *changes* in the amount of savings, and is independent of the level of savings.

[25] *Ibid.*, p. 362 (also II, 316-17).

Say made a more prolix refutation in his *Letters to Malthus*.[26] Say's letters have considerable merit, and in particular they contain a remarkable sketch of the circular flow in an enterprise economy. But they emphasize Say's lack of precision, and at one point he makes a fatal admission:

> Mr. Ricardo claims that, in spite of taxes and other fetters, the extent of industry is always as great as that of the capital employed, and that all savings are always employed because the capitalists do not wish to lose the interest. On the contrary, there are considerable savings that are not invested when it is difficult to find a use for them, or which, once invested, are dissipated in a mistaken undertaking.[27] [my translation]

Malthus claimed that this concession was "all that I contend for" (VIII, 260), which is not true because Malthus did not make hoarding the basis of his argument. But he was right in saying that Say did not understand his peculiar position: "This important distinction however Say does not make for me, but runs off into an 'Eh! Monsieur!' " (VIII, 261). Ricardo also felt that the *Lettres* "are not very well done" (VIII, 276).

Ricardo once more came against a critic of the Mill-Ricardo theory when he wrote a commentary (IV, 325-56) on William Blake's *Observations on the Effects Produced by the Expenditure of Government* (London, 1823), to which Blake wrote a rejoinder. Blake attributed the postwar distress to "the transition from an immense, unremitting, protracted, effectual demand, for almost every article of consumption, to a comparative cessation of that demand."[28]

> I believe there are at all times some portions of capital devoted to undertakings that yield very slow returns and slender profits, and some portions lying wholly dormant in the form of goods, for which there is not sufficient demand. I believe, too, that when capital accumulates rapidly from savings, it is not always practicable to find new modes of employing it. Now, if these dormant portions and savings could be transferred into the hands of government in exchange for its annuities, they would become sources of new demand, without encroaching upon the existing capital.[29]

Blake's discussion contained ample confusion and lacunae, but Ricardo's rejoinder was not impressive: his mind was closed on the subject, and he insisted on postulating full employment in dealing with a theory of unemployment (IV, 356).

We have touched on only a small part of the contemporary literature bearing on market gluts, but a review of Ricardo's works is not an appropriate occasion for a full survey. Even this strand of the literature, however, is enough to tell us that the analysis rose above the level of bare truisms and

[26] *Lettres à M. Malthus* (Paris, 1820). There is a grotesque "translation"; *Letters to Malthus*, reprinted (London, 1936).

[27] *Lettres*, p. 101 n.

[28] *Observations*, p. 88.

[29] *Ibid.*, pp. 54-55 (and IV, 340).

blind disregard of commercial fluctuations. The triumph of Ricardo over Malthus cannot be regretted by the modern economist: it is more important that good logic win over bad than that good insight win over poor.

IV. *Conclusion*

One leaves Ricardo with some envy. In his time economics was at least as pleasant a subject as it is today. The basic truths of the science seemed almost within grasp: only a few concepts like the measure of value had still to be tidied up, or so it seemed. The frustratingly complex economy which generations of research have uncovered was still hidden in the future. The truths of economics then led directly to good social policy, which only an unrepresentative, soon to be reformed, Parliament sometimes prevented from being translated into immediate action. The possibility that good economics will not inevitably carry the day in a democracy, of which we are acutely aware, also dwelled in the unpredicted future. A diligent economist, to mention a smaller but not negligible attraction, could read all the worthwhile economics appearing and still have time to do work of his own. Indeed, if he were merely to reside in London, "the place in which we meet a succession of clever men . . . and in which we gain instruction by the active opposition which all our speculations whether right or wrong encounter" (IX, 312), he could exchange opinions with a majority of the world's good economists. But we must be content with our compensations, which include things as precious as greater knowledge and greater humility.

We are still to receive from Sraffa a biography of Ricardo. We shall wait for it with the patience which he munificently rewards.

COMMUNICATIONS

Biological Analogies in the Theory of the Firm: Comment

Edith Penrose's "Biological Analogies in the Theory of the Firm" appearing in the December, 1952, issue of this *Review* criticises an article of mine appearing in the *Journal of Political Economy* on the ground that it rests on the theory of biological evolution.[1] A brief reply may serve to bring out some points of scientific value.

The presently relevant aspects of my original article can be summarized briefly. Economics predicts the observable effects of change in exogenous and endogenous factors impinging on the operation of the economic system. It analyzes the economic effects of these various factors upon the optimal conditions of firms and other basic units. From these deduced changes in optimal conditions it predicts that the constellation of firms found in a new environment will have characteristics closer to the new optimal conditions than to the old. It does not (or should not) assert that any or all of the firms in the original circumstances will adjust or modify themselves to achieve the conditions which are optimal for the new conditions. What it does (or should) say is that in the new environment the observed characteristics of the population of firms will be found to have changed toward the new optimal conditions. And this will have happened whatever the wisdom, perspicacity, or motivation of the individual firms. Those who like to think that firms are able to make the required adjustments are free to do so; others, among whom the author is to be counted, can be less restrictive in their axioms and still get similar predicted observable circumstances.

These less restrictive axioms do not assert that businessmen try to maximize profits, since, with uncertainty, no definite meaning can be attached to that prescription of behavior. It is true that there is some situation which, if achieved, would, *ex post*, have yielded a larger profit than any other would have. But this situation is unknowable; hence the lack of prescriptive content. But the economist can, from certain generalized production functions and demand functions, infer the directions of changes in the optimal values of the variables of these functions if these values are now to approach the conditions of the new rather than the old optimum. The economist can do this not because he has greater knowledge than the individual firm but because he is analyzing changes in the optimum conditions of generalized functions. The businessman requires much more than this; he needs to know his particular values, not merely the directions of changes between two different optima derived from generalized functions.

The significant point is that the new optimum is approached even in the

[1] Edith T. Penrose, "Biological Analogies in the Theory of the Firm," *Am. Econ. Rev.*, Dec. 1952, XLII, 804-19.

Armen A. Alchian, "Uncertainty, Evolution and Economic Theory," *Jour. Pol. Econ.*, June 1950, LVII, 211-21.

absence of foresighted appropriate adaptive behavior of individual economic units. It can be induced by differential growth, viability, or profit rates in a competitive regime in which (1) realization of profits is a necessary condition for survival, and in which (2) there is a diversity of adjustments manifested in the variety of factor-service input ratios or consumption patterns.

Economic analysis is therefore not merely a theory of the behavior of individuals; it is a theory of the operation of an economic system, and it yields predictions about the effects of certain changes in both endogenous and exogenous factors affecting the economy. To regard it as a theory of individual behavior is fatal.[2]

With this prologue I now turn to Mrs. Penrose who says she is "not so much concerned to present an analytical critique of the theory as to discuss the applicability of the biological analogy and the implications involved in its use."[3] This is a bit puzzling. The theory I presented stands independently of the biological analogy. Criticisms of the latter are irrelevant to the theory. Mrs. Penrose seems, at the same time, not to have noted another distinction —that between (1) the foundations and development of a theory and (2) the methods of exposition and presentation of it. In my original article every reference to the biological analogy was merely expository, designed to clarify the ideas in the theory.[4]

Having said this much, I could stop if Mrs. Penrose had criticized only the analogy, for then her criticisms would have been irrelevant. But some of her criticisms are directed at the theory, and they are incorrect.

Some of her criticisms rest on logical errors.[5] Most of her criticisms rest on

[2] For example, see the prolonged exchange of views on profit maximization and marginalism beginning with R. A. Lester, "Shortcomings of Marginal Analysis for Wage-Employment Problems" (Mar. 1946) and F. Machlup, "Marginal Analysis and Empirical Research" (Sept. 1946) and continuing for three years in this journal. Machlup's defense of profit maximization and marginalism against those who were trying to test axioms rather than theorems would have been airtight if he had (a) defended profit maximization analysis as based on a set of axioms postulating accurate foresight and from which theorems about the operation of the economic system are derived rather than as a theory of individual entrepreneurial behavior, (b) pointed out the difference between testing axioms and testing theorems, and (c) not defended marginalism or profit maximization as a basis for describing individual behavior in the presence of uncertainty.

[3] Penrose, *op. cit.*, p. 811.

[4] Readers of an earlier draft, containing no references to the biological similarity, urged that the analogy be included as helpful to an understanding of the basic approach. My conviction that they were right has been strengthened by Mrs. Penrose, for, paradoxically, she has revealed that the analogy is even better than I had suspected.

[5] For example, she confuses necessary and sufficient conditions in saying that if we "abandon the assumption" that "businessmen . . . strive to make as much [money] as is practicable" and that "if we assume men act randomly, we cannot explain competition, for there is nothing in the reproductive processes of firms that would ensure that more firms would constantly be created than can survive." *Op. cit.*, p. 812. Except for her insisting on the analytical use of the biological analogy such inferences on her part would be unjustified. Conditions for competition in the two areas, biology and economics, need not be the same; and in any event desire to make a profit is not profit maximization and furthermore random behavior was not assumed; I repeatedly stated that it was used as a starting point for the complete exposition. See also p. 815 where "long run" is interpreted as an actually realized situation.

a misconception of what I wrote. In an extremely revealing footnote, she misconstrued the logic of my position, which she restated as follows: "Economists can know the conditions of survival. . . . Therefore economists can know what firms must do to make zero or positive profits. Therefore economists can know how maximum profits can be obtained."[6] Not only do the second and third sentences represent a *non sequitur*, but in addition they exactly reverse my position. Let me explain this by a little analogy(!) A football coach knows that the condition of winning is making more points than his opponent. Does knowing this imply that the coach can know what his team must do in order to win? Does the coach know how this can be done? Defining a desired condition is not the same thing as knowing how to achieve that condition. The confusion between desired conditions and the methods of achieving those conditions is a confusion which I attempted to expose in my original article. Profit maximization purports to be a definition of a situation, not a statement of a method of achieving that condition. That is what Enke meant when he said it was a description, not a prescription.[7] That distinction is fundamental. Ability to prescribe behavior is not necessary—however helpful it is—for the economist to perform as an economist. I started my presentation in the original paper with an extreme model of "random" behavior in order to emphasize that such special knowledge is not necessary. Subsequently, motivated purposive behavior was introduced—without implying profit maximizing because this could not be defined. It was then stated that even with varied motivations the economist had a method for predicting the types of new situations or firms which would have higher probability of survival and thus tend to become the dominant surviving type. It was denied that the economist could predict which particular firms would survive and what adjustments each particular firm ought to make. Thus all of Mrs. Penrose's criticisms on pages 813-15 miss the point.

Finally, she asserts that "the biological framework in which he cast his model has led him to underestimate the significance" of the precise rôle and nature of purposive behavior in the presence of uncertainty and incomplete information.[8] Whether I am right or wrong in my implicit estimation of the significance of certain undefined types of purposive behavior cannot be judged by examining the axioms from which theorems are derived. Only by testing its predictive value by empirical investigation can the theory and its implications about the significance of a particular type of purposive behavior be evaluated properly.

Surely some of her criticisms must hit their target: but this target is one of her own creation—the utilization of strictly analogous reasoning in which the concepts, conditions and interpretations of a theory in one discipline are blindly picked up and applied in another discipline. Neither Enke nor I did that. And there is a grave danger in shooting so many arrows toward this

[6] Penrose, *op. cit.*, p. 813, footnote 26.

[7] Stephen Enke, "On Maximizing Profits: A Distinction Between Chamberlin and Robinson," *Am. Econ. Rev.*, Sept. 1951, XLI, 566-78.

[8] Penrose, *op. cit.*, p. 816.

straw target. Economics may gain much, as it already has, from the concepts and methods of analysis of other disciplines.

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Comment

In the interests of brevity, I shall make only one important point by considering Mrs. Penrose's footnote 26. She wonders "why it is reasonable (on grounds other than professional pride) to endow the economist" employing "viability analysis" with the ability to predict the characteristics of surviving firms adopted by the environment, while not crediting the entrepreneur with equal knowledge. Let us consider gas stations, all operating on a 5 cent a gallon retail margin; there is strong price leadership and enforcement by suppliers, so that this margin is not infringed. If this margin were cut to, say 2 cents, the economist, or any other informed person, can predict that in the long run (1) there will be fewer gas stations, (2) gallonages per surviving station will rise, (3) services will be cut, (4) more emphasis will be placed on lubrications, etc., and (5) costs will fall towards 2 cents a gallon. However, no economist, and no one else, can predict which operator on which location with which brand and which employees might, in fact, survive. It is within the wit of man to describe in aggregate terms some of the qualitative characteristics of surviving firms—but not to prescribe quantitatively the measures that will maximize the profits of an individual firm. Professional pride has nothing to do with it.

Stephen Enke*

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Rejoinder

In his original article Alchian wrote: "The suggested approach embodies the principles of biological evolution and natural selection. . . ."[1] If this and similar passages were not intended to imply that these "principles" were in fact part of the "foundation," of this theory, I can only plead a (perhaps pardonable) misunderstanding of them. I am happy to accept his assurance that the biological analogy was used merely as an expository device. The criticism nevertheless remains that the biological analogy places the whole problem in a misleading frame of reference. That I say this indicates that the differences between Alchian and myself, as he pointed out, go much deeper than is revealed by my objections to his analogical reasoning.

My original criticism of the "viability" analysis was simply that it gives an inadequate and inconsistent account of the significance of human motivation in economic affairs. (This is precisely the reason, incidentally, why the biological model fitted it so well.) In trying to avoid the difficulties inherent in predicting human behavior in an uncertain world, Alchian has given us a model in

[1] Armen A. Alchian, "Uncertainty, Evolution and Economic Theory," *Jour. Pol. Econ.*, June 1950, LVII, 211 (hereafter cited as Alchian, *JPE*).

economics which, it seems to me, (1) explains very little—certainly much less than the traditional economic theory—and relies on a grossly misleading and unjustifiable assumption about competition;[2] (2) is mistaken as to the appropriate use of the model of the profit-maximizing individual firm in economic analysis;[3] and (3) is inconsistent in its treatment of knowledge as between economists and businessmen.[4]

I. *The Misleading Assumption of Competition*

Alchian claims as a chief merit of his theory that it does not rely on "predictable individual behavior";[5] the results yielded by it "will have happened whatever the wisdom, perspicacity, or motivation of individual firms."[6] He rejects the "restrictive axiom" that businessmen try to maximize profits, and substitutes the even more restrictive "axiom" that there exists competition so intense that firms must conform to "optimum" conditions in order to survive. Enke has pointed out that "If there is no competition, a great many policies—all 'good' but only one 'best'—will permit an isolated monopoly to survive."[7] Clearly this is true whenever there is a large amount of monopoly in any competitive system. Hence it is necessary to assume intense competition in order to conclude, as Alchian does, that "Among all competitors, those whose particular conditions happen to be the most appropriate of those offered to the economic system for testing and adoption will be 'selected' as survivors."[8]

Now I should not object to this aspect of his model if Alchian could show one of the following to be true: (a) that intense competition could reasonably be expected to occur whatever the conscious motivation of individuals; (b) that sufficiently intense competition exists in reality; or (c) that the assumption leads to more useful results than the assumption it displaces. Both (a) and (b) are satisfied by the biological theory of natural selection, but my original criticism was that neither (a) nor (b) is satisfied by Alchian's model patterned after it. Alchian himself barred (c) as a criterion for determining the superiority of this theory over the traditional theory when he pointed out that both this and the traditional approach yield the same results.[9]

[2] Edith T. Penrose, "Biological Analogies in the Theory of the Firm," *Am. Econ. Rev.*, Dec. 1952, XLII, 812.

[3] *Ibid.*, p. 813.

[4] *Ibid.*, pp. 813-15.

[5] Alchian, *JPE*, p. 211.

[6] Alchian, above, p. 600 (hereafter cited as Alchian, *AER*).

[7] Stephen Enke, "On Maximizing Profits: A Distinction between Chamberlin and Robinson," *Am. Econ. Rev.*, Sept. 1951, XLI, 571.

[8] Alchian, *JPE*, p. 213. It should be noted that "appropriate" in this quotation can only refer to those "optimal" conditions that can be known in advance by the economist from his knowledge of "generalized production and demand functions." Were it otherwise, Alchian's model would be reduced to the circular and empty proposition that only the most appropriate survive because those that survive are the most appropriate.

[9] Alchian states that with his "less restricted" axioms he can get "similar predicted observable circumstances." Enke explicitly notes that predictions are the same on the

If I am correct in asserting that none of these three conditions is met by Alchian's model, then the assumption of intense competition becomes a kind of *deus ex machina* introduced to make the model work, having no justification except to serve the purpose of replacing the human motivation so summarily dismissed from its former key position.

Competition cannot reasonably be expected to exist if men are presumed to act randomly. Under such circumstances its occurrence would depend on the constant and rapid creation of new firms, and without motivation it is hard to see why new firms should be created at all. Even if motivation is introduced in the modified form of a "desire to make profits," there would still be no reason why firms should appear in sufficient numbers in exactly the required industries or why there should be any response at all to many types of change, for example, to a general price rise due to government spending.[10] This type of response can occur only if firms seize on opportunities to make a little *more* profit—and this comes to the same thing, for all theoretical purposes, as the assumption that maximum profits are desired.[11] The existence of competition cannot be explained by Alchian's model, whereas it is explained in the traditional model with its quasi-empirical assumption that businessmen desire maximum profits.

There would be no need, however, for Alchian to *explain* the existence of intense competition providing that it were found to represent the facts of the real world with reasonable accuracy. But from the evidence at hand one cannot well conclude that a notable characteristic of our economic life is the prevalence of the kind of intense competition required to ensure that firms conforming to the "optimum conditions" of a competitive model have a higher probability of survival than large diversified firms in protected monopolistic positions.[12]

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basis of either theory and the economist can predict "as if each and every firm knew how to secure maximum long-run profits" (*op. cit.*, p. 567). On the other hand, Alchian insists that "only by testing its predictive value by empirical investigation can the theory . . . be evaluated properly" (*AER*, p. 602). But if we get the same results with two theories, how will *empirical* research help us to choose the superior of them? The conclusions Enke draws about his gas stations certainly do not require the roundabout approach of viability analysis. I should be surprised, incidentally, if both theories would yield the same result when applied to the real world of monopolistic competition; but this is beside the point since Alchian and Enke insist that they do.

[10] *Cf.* Penrose, *op. cit.*, p. 813. It is my contention that an explanation of intense competition cannot be satisfactorily given unless an assumption equivalent to profit-maximizing behavior is made. The demonstration of this, however, falls outside the bounds of this rejoinder.

[11] When Alchian states that "desire to make a profit is not profit maximization" he obviously believes that the profit-maximizing assumption implies that individual firms must be able to ascertain what maximum profits are and actually to achieve them—a contention rejected here. For an excellent discussion of this question see Fritz Machlup, *The Economics of Sellers' Competition* (Baltimore, 1953), pp. 53-56.

[12] This especially applies to monopolistic positions resulting from the established reputation of the firm as a whole, and not primarily to special positions regarding particular products.

In other words, although useful results are sometimes obtained by assuming the existence of intense competition, the assumption itself is no more "realistic" nor "intellectually more modest"[13] than the assumption that individual firms try to maximize their profits. Both assumptions are highly artificial analytical devices, though very useful when appropriately used. The latter is applicable to a wider variety of problems and explains considerably more than the former. It takes account, albeit in an unrealistically pure and rigorous form, of the undoubted fact that businessmen are moved by a desire to make money, and it thus explicitly acknowledges human purpose. This is straightforward and has many advantages. The argument in favor of rejecting it on *a priori* grounds has to be powerful indeed.

II. *The Inappropirate Use of "Profit Maximization"*

The assumption that firms try to maximize their profits is rejected by Alchian, not for empirical reasons arising from a study of how firms actually do behave, but for logical reasons arising from the existence of uncertainty. He holds that in the presence of uncertainty no unique maximum profit position exists; that it is therefore impossible to give any meaning to the proposition that firms try to maximize profits; and that, consequently, a mere desire for maximum profits provides no guide for action. On the other hand, he is prepared to admit "motivated purposive behavior" and to recognize that firms are in business to make a profit, although apparently he feels that even this modified motivation is going a bit far.[14]

Once it is allowed that firms do try to make profits, it is not difficult to go a bit further and assume that in general they tend to try to make, if they think they can, a bit more profit than they are making. The question, then, is what difference does it make whether any individual firm knows the *best* way of going about its business—or indeed whether there is any "best" way before the event. This would make a great deal of difference if the economist were attempting to predict the actions of any particular firm. But the economist does not attempt such predictions—nor could he succeed if he tried, as Alchian rightly emphasizes. The economist uses the model of the profit-maximizing individual firm, not to predict the actual conduct of any firm, but merely as an analytical technique to assist him in understanding the effect of change on prices, production, employment, etc.[15] For this purpose it makes no difference

[13] "The approach suggested here is intellectually more modest and realistic . . . ," Alchian, *JPE*, p. 211.

[14] "The pursuit of profits . . . is the relevant objective. . . . Unfortunately, even this proximate objective is too high. Neither perfect knowledge of the past nor complete awareness of the current state of the arts gives sufficient foresight to indicate profitable action." Alchian, *JPE*, p. 218.

[15] At no point has Alchian demonstrated that his undeniably valid objection to the use of the profit maximization assumptions for the purpose of predicting individual firm behavior is an equally valid objection to its use in the analysis of the economy as a whole. Indeed, he suggests the contrary when he concludes that "most conventional tools and concepts are still useful, although in a vastly different analytical framework . . ." (Alchian, *JPE*, pp. 219-20). If the new framework were built on a more acceptable "axiom" than the old, it would be desirable; if it is not, as I am trying to show, then it seems to me that its creation becomes an unnecessary *tour de force*.

whether the conduct of any particular firm can be predicted, whether any firm at all can actually succeed in maximizing profits or even whether uncertainty makes it impossible to say that any particular profit is a maximum.[16]

The existence of uncertainty and the fact that different businessmen do evaluate risk differently is one of the reasons why firms do not all rush at the same speed in the same direction. In most cases differences in attitude toward uncertainty will affect the *rate* of movement in the economy, rather than the *direction* of movement. If firms respond at all to any of the disturbances usually analyzed by the economist—taxes, changes in demand or cost, etc.—they will move in the direction predicted by the economist using the traditional theory and *for the reasons assumed in that theory.*

On this level all that the traditional analysis does is to provide the economist with some insight into the type of action appropriate if losses are to be avoided or more profits made when a disturbance occurs. All he need assume is that most businessmen are intelligent enough not to act perversely, that there will always be some firms who prefer to make more money rather than less under otherwise equal conditions and thus will try to make such adjustments as they think appropriate to this end. If the *kind* of response which actually occurs in the economy when a change takes place corresponds to the *kind* of response appropriate in the model of the profit-maximizing individual firm, then the model has shown its worth for all the purposes for which it is normally used.

III. *The Treatment of Knowledge*

Alchian's model is inconsistent in its treatment of what economists and businessmen can know. In a footnote to my original article I presented a "summary" of the logic of his argument, which read in part: "Economists can know the conditions of survival. *Therefore economists can know what type of firm can escape negative profits.* Therefore economists can know what firms must do to make zero or positive profits. Therefore economists can know how maximum profits can be obtained."[17] In quoting this in his reply, Alchian omitted the sentence here italicized, presumably because he did not think it important. He then charged me with a *non sequitur* and with reversing his position.[18] But, although the words of the omitted sentence are mine, *the logical sequence is his,*[19] and it is precisely at this point that his entire argument, which starts out with the proposition that it is impossible to know how maximum profits can be obtained, reverses itself.

Alchian's insistence that economists can know "what types of firms or

[16] For this reason it is misleading to call it the "theory of the firm" at all—but that is another story. It should also be noted that uncertainty is only one factor destroying the applicability of the theory for predicting the actions of any particular firm.

[17] Penrose, *op. cit.*, p. 813.

[18] Alchian, *AER*, p. 602.

[19] "With a knowledge of the economy's realized requisites for survival and by a comparison of alternative conditions, he [the economist] can state *what types of firms or behavior* relative to other possible types will be more viable" (Alchian, *JPE*, p. 216, italics mine).

behavior . . . will be more viable" makes all the difference in the world to the argument. Consider his example of the football coach. If the condition of winning is merely the definition of winning, then of course we get nowhere. But if the football coach knows *what type of team or type of behavior can win*, can one seriously argue that he can have no idea as to how the required type of team or action could be achieved (even though he himself might not be able to achieve it)? If the omniscience of the economist extends to the type of firm or of behavior that can survive, it is mere quibbling to insist that he cannot advise as to how that type may be achieved.

Now my point is simply that economists do not and cannot have that knowledge of the long-run conditions of survival in the real world which is necessary to give Alchian's model the predictive power he claims for it. Given uncertainty and, in particular, purposive activity on the part of firms, the knowledge of both economists and businessmen about the type of behavior or of firm that will survive in the long run in the real world is equally limited and for much the same reasons. I readily agree that economists deal with, and do know, certain things businessmen do not deal with and consequently do not know; but Alchian is concerned, not with what people in different occupations *do* know, but with what people *can* know in an uncertain world. The proposition that uncertainty makes it impossible for businessmen to form reasonably accurate ideas as to how profits might be made, yet on the other hand does not interfere with the economist's ability to know what type of firm or activity can make profits, seems to me to be simply inconsistent. Uncertainty does not make the businessman's knowledge useless to him in his search for profits; and if the economist can predict anything about the real world of firms it is only because he has an idea about how firms are likely to respond to certain kinds of change relevant to their operations.

The weakness of the traditional analysis for predictive purposes in either the short or the long run is associated with the pound of *ceteris paribus*. It is clear, even from Enke's example, that viability analysis must use the same pound to exclude all unpredictable actions of firms in response to environmental changes which themselves change the conditions of survival. This is the chief import of the criticisms on pages 813-15 of my paper which Alchian believes miss the point. I did *not* do Alchian the injustice of implying that he thought that the economist could, or should be able to, predict the fate of any *particular* firm. On this point we are in complete agreement.

Attempts radically to alter the framework of existing theory are always likely to meet resistance, but progress comes from the interaction between innovation and resistance to innovation. I do not want my criticisms to be interpreted as an attack on the purpose of Alchian's original, provocative and able article—to approach some of the problems connected with uncertainty from a new direction. I am inclined to agree—if I may accept for once a biological metaphor of Alchian's—that "the marriage of the theory of stochastic processes and economics"[20] may be very fruitful; but let it be a

[20] Alchian, *JPE*, p. 221.

marriage by mutual consent with a community property agreement, and not a violent seduction.

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Depreciation Allowances, Replacement Requirements and Growth: A Comment

In his recent article,[1] Profesor Eisner demonstrated that, when price changes are ignored, "Depreciation allowances exceed replacement requirements in growing economies or growing firms"; and that "... only when prices increase somewhat faster than real investment do replacement requirements approach the magnitude of depreciation allowances."[2] From this he concluded that "... the phenomenon of growth places on shaky ground those who would argue that depreciation allowances are insufficient to meet replacement requirements."[3] Eisner is literally correct in this conclusion, but it appears that he meant by "those who would argue" the many businessmen and accountants who contend that depreciation allowances are too low, for at the start of his paper he stated that their argument "... declares that the cost of replacing expiring equipment [thereafter referred to in his paper as replacement requirements] in today's inflated market is actually much greater than current depreciation charges, which are related to original cost of assets."[4] The inference is that the businessmen and accountants who contend that depreciation allowances are too low may be wrong under their own measurement criteria.

Before examining the validity of this inference, it is advisable to note the following concepts: (1) The calculation of depreciation involves the establishment of both a cost basis and an allocation basis. (2) Conventional accounting practice is the straight-line allocation of historical cost. (3) Eisner used the term "replacement requirements" to mean the allocation of replacement cost to the year of retirement.

Eisner was mistaken in his impression that the critics of conventional accounting practice advocate replacement requirements for the measurement of depreciation. Although some popular discussions of the subject do use the word "replacement" rather loosely, to my knowledge use of replacement requirements has not been advocated for calculating depreciation. Indeed, a survey of the literature reveals that all that has been advocated and discussed is a change in the cost basis, *i.e.*, the substitution for historical cost of either replacement cost or current purchasing power of historical cost.[5] Under either of

[1] Robert Eisner, "Depreciation Allowances, Replacement Requirements and Growth," *Am. Econ. Rev.*, Dec., 1952, XLII, pp. 820-31.

[2] *Ibid.*, pp. 830 and 831.

[3] *Ibid.*, p. 831.

[4] *Ibid.*, p. 820.

[5] See E. Cary Brown, *Effects of Taxation, Depreciation Adjustments for Price Changes* (Boston, 1952), particularly pp. 93-123, where the various proposals are discussed, and pp. 151-54, where replacement cost depreciation is estimated. For the accountant's treat-

these two methods the allocation basis would remain straight-line allocation. Therefore, Eisner's analysis, resting as it does on the use of retirements for the allocation basis, does not, as he inferred, confound those who are criticizing current practice, since they do not advocate *replacement requirements* as the basis of measurement.

Since Eisner has raised the cost of maintaining productive capacity (of which replacement requirements is a special case) as a possible basis for allocation, it may be of some interest to compare its accuracy for the measurement of depreciation with that of straight-line allocation. The latter is widely used solely because it is simple and objective; the accounting profession rationalizes the practice with the view that depreciation is ". . . a process of allocation, not of valuation."[6] Similarly, there is no *a priori* reason why the maintenance of productive capacity should result in the correct determination of income. Therefore, comparison of the two methods requires the establishment of a standard of comparison, a third method that is theoretically valid.

Such a criterion is to be found in neoclassical theory, where an asset's income is defined as the periodic payment in perpetuity that has a present value equal to the present value of the asset's expected future receipts.[7] Since depreciation is simply the difference between receipts and income, it follows that a definition of depreciation is implicit in the above. This definition can be stated directly as the present value of the future receipts at the start of the period less the present value of the future receipts at the end of the period with the period's actual receipts excluded from the latter quantity. Or, restated in the language of accountancy, the cost (of depreciable assets) incurred in realizing a period's revenue is the expiration in present value of the assets' expected future receipts. If this measure of depreciation, termed here the "economic life method," is accepted as valid, straight-line allocation and expiration of productive capacity may be compared for accuracy by determining how closely each approximates economic life depreciation. Such a comparison is made below through three illustrative cases, each of which assumes a different path for an asset's receipts over its life.

Before going into these cases, two points should be noted: (1) The cost basis of valuation is a fundamental postulate of accounting, and this postulate will not be violated. Specifically, although the expected receipts at time of purchase will be used to determine that portion of an asset's cost to be charged as depreciation in each year of its life changes in expected receipts over the asset's life will not modify its cost or the depreciation charge. (2) Since the issue here is the allocation of cost—not the cost basis—we need not become

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ment of the subject, see W. A. Paton and W. A. Paton, Jr., *Asset Accounting* (New York, 1952), pp. 325-28; R. D. Kennedy and S. Y. McMullen, *Financial Statements*, rev. ed. (Chicago, 1952), pp. 327-32; William Blackie, "What Is Accounting Accounting For Now," *N.A.C.A. Bulletin*, July 1, 1948, XXIX, 1349-1378; and George O. May, *Business Income and Price Levels, An Accounting Study* (New York, 1949).

[6] Committee on Accounting Procedure, American Institute of Accountants, *Accounting Research Bulletin* No. 20 (special), p. 167.

[7] *Cf.* J. R. Hicks, *Value and Capital*, 2nd ed. (Oxford, 1946), pp. 171-88.

involved in any debate over replacement versus historical cost. The latter will be used here.[8]

The first case considers the asset that functions perfectly until the day it falls apart—the case of the "one-hoss shay." Table I presents illustrative data

TABLE I.—DEPRECIATION OF A "ONE-HOSS SHAY"

Period	Receipts	Present Values[a]	Depreciation Based on		
			Productive Capacity	Economic Life	Straight-line Allocation
1	$10	$61.45	$ 0	$ 3.86	$ 6.14
2	10	57.59	0	4.24	6.15
3	10	53.35	0	4.67	6.14
4	10	48.68	0	5.13	6.15
5	10	43.55	0	5.64	6.14
6	10	37.91	0	6.21	6.15
7	10	31.70	0	6.83	6.14
8	10	24.87	0	7.51	6.15
9	10	17.36	0	8.27	6.14
10	10	9.09	61.45	9.09	6.15
Total			$61.45	$61.45	$61.45

[a] Present value at the start of each period of the remaining receipts discounted at 10 per cent.

based on these assumptions: (1) the asset has a ten-year life; (2) expected receipts vary with productive capacity; (3) the rate at which the receipts are discounted to arrive at their present value is 10 per cent; and (4) the asset's present value and its cost are equal at time of purchase. In Table I straight-line depreciation is a closer approximation of economic life than productive capacity. However, economic life moves between straight-line depreciation and productive capacity with the variation in the asset's life and in its rate of discount. Hence, as either or both of these parameters are increased, economic life moves closer to productive capacity.

It may be noted that some accounting texts, when discussing alternative mathematical rules for the allocation of cost, mention an annuity method, which in reality is our economic life method. However, in illustrating the method they assume, as with an annuity, that receipts are constant over time, and the inevitable consequence is a depreciation charge which increases over time. Since they recognize this consequence to be unrealistic and since they consider the method merely a mathematical rule, they reject it as a measure of depreciation.[9]

[8] Replacement cost could also be used. Given for each method the allocation of an asset's cost to any year, the depreciation on a replacement cost basis is derived simply by multiplying the historical cost charge by the ratio of replacement cost to it. A detailed treatment of replacement cost accounting by the writer is scheduled to appear shortly in the *Accounting Review* under the title "The Valuation of Accounts at Current Cost."

[9] For example, see W. A. Paton, *Advanced Accounting* (New York, 1941), pp. 284-86.

TABLE II.—DEPRECIATION OF AN ASSET WITH PRODUCTIVE CAPACITY DECLINING AT AN INCREASING RATE

Period	Receipts	Present Values	Depreciation Based on		
			Productive Capacity[a]	Economic Life	Straight-line Allocation
1	$10.00	$50.86	$ 1.27	$ 4.86	$ 4.62
2	9.75	46.00	1.58	5.15	4.62
3	9.44	40.85	1.98	5.35	4.62
4	9.05	35.50	2.49	5.50	4.62
5	8.56	30.00	3.10	5.56	4.62
6	7.95	24.44	3.93	5.50	4.62
7	7.18	18.94	4.83	5.29	4.62
8	6.23	13.65	6.05	4.87	4.62
9	5.04	8.78	7.58	4.16	4.62
10	3.55	4.62	9.46	3.09	4.62
11	1.69	1.53	8.59	1.53	4.66
Total			$50.86	$50.86	$50.86

[a] Derived by multiplying the cost of the asset with the percentage decline in receipts (which is equal to the percentage decline in productive capacity) during the period. The cost is $50.86, the present value at the time of purchase. This is the method that I presume Eisner would use in calculating depreciation.

In the second case, which Eisner considered the more general one, productive capacity declines at an increasing rate over the asset's life. Table II, which presents the illustrative data, is based on the same assumptions (with the exception of asset life) made in the first case, but here the receipts are derived from the function

$$C_t = 11 - 1.25^{t-1}$$

in which C is receipts and t equals time period. It can be seen that economic life depreciation first rises and then falls, but for the most part it remains close to straight-line allocation. As before, the agreement between these two measures of depreciation varies inversely with the life of the asset and with its rate of discount, but here it also varies inversely with another parameter—the shape of the receipts curve. As this curve approaches a straight line the agreement between economic life depreciation and straight-line allocation increases. Conversely, as these three parameters are increased, the difference between productive capacity and economic life depreciation is reduced. However, here the parameters must have considerably larger and less realistic values than in the first case for productive capacity to be superior to straight-line allocation.

The assumption of the two previous cases that expected receipts vary with productive capacity is in all probability not realistic. It is much more likely that the productive capacity of an asset expires little, if at all, over the period in which its receipts fall to zero. The decline in receipts during this period is due in part to increasing maintenance costs, but primarily it is due to the asset's increasing technological and/or demand inferiority in relation to new equipment, the demand inferiority arising from the discovery of substitutes

for the asset's products. The decline in receipts will take the form of a rise in factor costs and/or a fall in product prices.

This third case is illustrated in Figure 1, with the receipts function derived by assuming (1) that value added in the initial period is $50, with labor cost $40 and receipts $10, and (2) that the cost-price changes over the asset's life are equivalent to an annual 1-½ per cent increase in labor costs.[10] Hence, the receipts function is

$$C_t = 50 - 40(1 + .015)^{t-1}$$

and the asset life is 15 years. With this receipts function and with a 10 per cent rate of discount assumed, economic life depreciation falls continuously

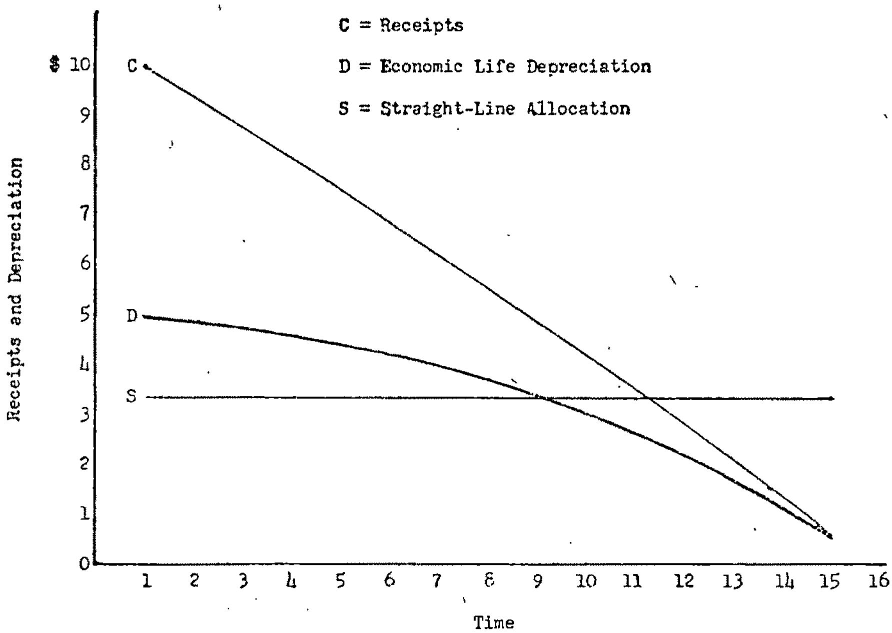

FIGURE 1. RECEIPTS AND DEPRECIATION OF AN ASSET WITH CONSTANT PHYSICAL PRODUCTIVITY AND DECLINING PROFITABILITY OVER TIME

over the asset's life. Consequently, since depreciation based on productive capacity is negligible in this case until possibly the last few years of the asset's life, straight-line allocation is for this asset by far the more accurate of the two methods.

It should be noted that, of the three cases presented, the approach to agreement in this case between economic life and straight-line allocations is by far the least sensitive to changes in the parameters. This can be seen as follows:

[10] These values were selected because: (1) A labor cost equal to 80 per cent of value added seems realistic for a manufacturing firm. (2) National output has been estimated to increase by about 3 per cent per year, with the increase fairly evenly divided between population growth and productivity gains. (3) Productivity gains give rise to a corresponding increase in real wages.

(1) The approximately linear decline in receipts in Figure 1 is not peculiar to the coefficients used in the illustration. It will hold for all values of the coefficients which are consistent with the basic assumptions underlying the third case. (2) Given this behavior for receipts, any change in the life of the asset, either by rotating the receipts curve around its intercept with the vertical axis or by shifting that curve, will not materially influence the form of the depreciation curve. (3) If the rate of discount is low, the depreciation curve will fall continuously at an increasing rate, as shown in Figure 1. However, if the rate is high, the depreciation curve will first rise and then fall, with all but the last few years close to the value for straight-line allocation. To illustrate this, assume a 25 per cent rate of discount and a receipts function of

$$C_t = 50 - 30(1 + .015)^{t-1}$$

in which case the asset has a useful life of 24 years and a cost of \$51.13. The straight-line depreciation is \$2.13, and the economic life depreciation rises and falls in the interval between \$2.00 and \$2.50 during the first nineteen years and then falls to zero.

In conclusion, if economic life is a valid measure of depreciation and if the assumptions of the third case are, in fact, a reasonable basis for predicting the behavior of an asset's receipts, then straight-line allocation is superior to productive capacity as a measure of depreciation. However, if the fall in an asset's receipts parallels the fall in its productive capacity, the superiority of straight-line allocation does not hold as the values of the parameters become relatively large.

Finally, there has been considerable dissatisfaction on the part of many businessmen, economists, and accountants with the two principal accounting conventions—historical cost and straight-line allocation. It is hoped that this comment may prove useful in the evaluation of the latter convention.

MYRON J. GORDON*

* The author is assistant professor of industrial management, Massachusetts Institute of Technology. He has benefited from the criticisms offered by Professor Eisner of an earlier draft of this comment. In particular, it was pointed out to what extent economic life depreciation could vary in the first two cases with an asset's life and rate of discount.

Rejoinder

Mr. Gordon apparently does not challenge the "literal" correctness of my argument. He does raise some question as to its relevance. I should like to attempt briefly to defend the relevance of the relation between depreciation and replacement both to the income-profits setting in which I placed it in my article and to economic theory in general. In doing so I shall venture certain criticisms but not outright rejection of the "economic life method" of depreciation described by Gordon.

1. *"Replacement Cost" and Profits*

As Gordon implies, "popular discussions" do appeal "rather loosely" to the concept of replacement requirements in the argument against current depreci-

ation practices. During the years since the second world war, in the face of repeated reports of record-breaking corporate profits there has been an important campaign to impugn official profits figures. This campaign has been based chiefly on the assertion that replacement cost actually exceeds allowable depreciation charges. For example, Mr. Enders M. Voorhees, chairman of the Finance Committee of the United States Steel Corporation, has declared:

"The item, 'Added to Cover Replacement Cost,' on U.S. Steel's income statement is designed to restore realism in the measurement of depreciation cost in the light of the dollar debasement transpiring between the time facilities were originally purchased and current accounting periods. . . . If a business is to continue it is necessary to recover the purchasing power of sums originally invested in tools of production *so that the tools may be replaced as they wear out.*"[1]

We may cite, in similar vein, the Machinery and Allied Products Institute's *Capital Goods Review* of November 1952, which devotes itself to "the tendency of conventional accounting procedures to overstate profits in an inflationary period." This publication adds (page 2):

"The overstatement arises, of course, from the practice of charging the original, or historical, cost of the inventory and fixed assets consumed in current production rather than the cost of replacing them. When replacement costs are rising, original costs, reflecting earlier, and hence lower, price levels, are insufficient for the *physical restoration of the assets used up in production* [italics added]."

Turning to the ranks of academic economists we may quote from Theodore Morgan's *Income and Employment* (New York, 1952, 2nd ed.): "But a considerable part of this profit rise [from \$6.5 billion in 1939 to \$39.8 billion in 1950] is an illusion. Profits are figured after *legally allowed* depreciation charges are subtracted. These charges are clearly far too low to replace capital: the costs of capital have more than doubled since before the war so that both current reserves and reserves accumulated during wartime are insufficient to *replace equipment wearing out and worn out*" (pp. 369-70—italics added in last sentence).

As Gordon suggests, popular advocates of the use of "replacement cost" are inconsistent about the concept they have in mind. They intimate broadly, as may be seen above, that depreciation allowances are not enough for replacement of the tools "as they wear out." (Actually, as my article indicated, under reasonable assumptions as to how tools "wear out," depreciation charges are likely to be more than ample for such replacement.) Yet, as Gordon points out, those urging "replacement cost" would not be satisfied with charging *the cost of replacing those assets currently requiring replacement*, although it is in terms of this cost that they make their appeal. They offer proposals to adjust currently allowable depreciation charges by price indices or to revalue assets in accordance with current market price, which indicate clearly that they would really like to base depreciation charges on *the cost of replacing all assets*

[1] Statement before the Subcommittee on Profits of the Joint Congressional Committee on the Economic Report, Washington, D.C., December 21, 1948. (Italics added.)

on the books. Whatever the general merits of such proposals, their proponents might spare us the quite fallacious accompanying lament that depreciation accounts would otherwise be insufficient to prevent firms from fading away.

Gordon is thus correct in observing, in effect, that when critics of conventional accounting practice get down to proposing specific changes in depreciation accounting (as opposed to general appeals aimed at the lay public) they do not advocate anything as useless from their point of view as the allocation of replacement cost to the periods in which replacement costs must be met. However, it is a bit difficult to see the justification for these critics in using "replacement" as a cost basis and then discarding it as an allocation basis. The reason for paying attention to "replacement" cost is presumably, as implied in the quotations above, that it enables firms to account correctly for the maintenance of assets in some "real," physical sense. In this context, replacement costs at any given time can only be relevant to that portion of the firm's assets requiring replacement at that time. Advocating replacement for the cost basis but not for the allocation basis strikes me as endeavoring "to have one's cake, and eat it too." I find it curious to note that Gordon sets himself a higher standard of consistency in his comment than he is apparently willing to impose upon advocates of "replacement cost." For in his presentation of the "economic life method" Gordon uses the one criterion, discounted value of future returns, for both his cost basis and his allocation basis.

I should classify myself as agnostic on the issue of whether the cost of replacing "worn out equipment" (or "the assets used up in production") should be a criterion for the adequacy of depreciation charges. I should demand, however, that advocates of "replacement costs" offer an unambiguous usage of this concept and face its mathematical implications.

2. *A Further Consideration of "Depreciation Based on Economic Life"*

I should classify myself as agnostic as well on Gordon's alternative suggestion or criterion for depreciation charges: "the present value of the future receipts at the start of the period less the present value of the future receipts at the end of the period." Depreciation in conformity with this criterion, which Gordon calls "the economic life method," has, I believe, many facets which Gordon has not explored adequately.

For one thing, current value must really vary with *expected* future receipts, since, of course, future receipts cannot be *known* currently. But this means that if business expectations improve, values of assets, *cet. par.*, rise. Would Gordon then have business firms note an "apreciation credit" which would be an addition to their current profit figure? He would not; but on what justification, other than that "the cost basis of valuation is a fundamental postulate of accounting"?

Secondly, while Gordon is concerned directly only with the constant price portion of my discussion, it should not be forgotten that the entire issue has developed on a policy level only in connection with general increases in prices. How then would the "economic life method" work out with rising prices? If as

a first approximation we assume that the monetary amount of future returns is expected to increase in direct proportion with price increases, we may well find that in a period of rising prices the "values" of assets would rise in their early years, if by "value" we mean the sum of discounted, expected, future returns. Then we might again be warranted in applying an "appreciation credit."[2]

Thirdly and fundamentally, however, I should like to take issue with both the substance and the implicit concept in Gordon's claim that the "economic life method" is appropriate for evaluation of other methods of depreciation because it is "theoretically valid." For it should be observed that economic theory is no monolithic structure. Theoretical concepts which are useful and preferable in approaching one type of problem may be quite inappropriate for another. All Gordon can properly assert is that straight-line allocation of original cost gives a rough "fit" to a curve measuring loss of value of an asset when this loss of value is defined as the loss in discounted value of known future returns (and when length of life of assets and the function indicating the rate of decline of productive capacity or returns are of certain particular parameters). But economic theory may suggest the utilization of a variety of methods of charging depreciation, depending upon the problem at hand. If we are concerned with the capacity for current output, as in certain problems of economic development or in problems of comparing actual output to potential output, we should probably find a measure of depreciation in terms of loss of productive capacity to be much more useful for analytical purposes.[3] Similarly, in application of the acceleration principle it would be more "theoretically valid" to rule out immediately as independent of increases in current demand that part of investment equal to replacement requirements as I defined them in my article than that part of investment that would maintain value intact in the sense Gordon defines "value." Finally, the theoretically appropriate measure of depreciation for purposes of income measurement, as I suggested in my article, should take into account "basic social, political and moral problems of the rights of ownership."

3. *Further Experimentation with Receipts Functions and Their Parameters*

Gordon glosses over certain other complications of his economic life method by failing to set forth general equations or formulae for depreciation charges in accordance with this method. Let us supply such general equations.

First, let V_t equal the value of an asset at the beginning of period t.

Let us designate V_{t+1} as the value of this asset at the beginning of the period $t+1$.

[2] This should certainly call into question Gordon's assertion (footnote 8) that "the depreciation on a replacement cost basis is derived simply by multiplying the historical cost charge by the ratio of replacement cost to it."

[3] Evsey D. Domar, for example, has suggested some interesting implications for our growth-of-productive-capacity models inherent in just the relation between replacement requirements and depreciation allowances under consideration, in his stimulating "Depreciation, Replacement and Growth," *Econ. Jour.*, March 1953, LXIII, 13-24.

Then let us designate U_t as that part of the value of the asset used up or dissipated in the period t.

From the above it follows that

$$U_t = V_t - V_{t+1} \tag{1}$$

Now, let a equal the length of life of the asset, let g equal the age of the asset at the beginning of period t, let s equal the discount ratio to apply to future returns [if $i =$ the "rate of discount," $s = (1 + i)^{-1}$], and let Y_j equal the returns expected on the asset in the period j.

Then it follows that

$$V_t = \sum_{j=t}^{t+a-g-1} Y_j s^{j-t}. \tag{2}$$

Similarly,

$$V_{t+1} = \sum_{j=t+1}^{t+a-g-1} Y_j s^{j-(t+1)} \tag{3}$$

In the one-horse-shay type asset we may assume, as does Gordon, that the amount of returns expected in each year of the life of the asset is the same. We may then substitute Y, designating this constant return, for Y_j, in (2) and (3). Then substituting (2) and (3), thus modified, into (1), we obtain

$$U_t = Ys^{a-g-1}. \tag{4}$$

Inspection of (4) now reveals readily that the amount of value actually used up in any period varies directly with the values of s and g and inversely with a (it should be recalled that all reasonable values of s will be between 0 and 1; the larger the value of $a - g - 1$, the smaller the value of U_t). Let us try values for s and a which may be believed to square with the real world and see if our conclusions are quite the same as Gordon's.

First, we should note the well-known business goal of rapid "pay-outs" on capital investment. A five-year pay-out criterion for many types of capital is quite common and while this time dimension varies (particularly with the ratio of plant to equipment), it is probably safe to conclude, at least for crudely illustrative purposes, that businessmen will not undertake capital expenditures, on the average, unless the sum of the absolute values of expected returns in the next five years is equal to the cost of the asset. Let us now assume that the length of life of the asset is not ten years, as assumed by Gordon, but 30 years, in accord with various estimates of the mean length of life of capital assets in the United States.[4] We then find that assets of a one-horse-shay variety which "pay-out" in the businessman's sense in five years but actually last 30 years must give returns subject to a discount ratio of about 80 per cent if the sum of future returns is to equal the original cost

[4] Domar suggests this figure of thirty years (*ibid.*, p. 5, fn. 1), citing Solomon Fabricant, *Capital Consumption and Adjustment* (New York, 1938), p. 34, and "estimates obtained orally from the United States Department of Commerce."

of the asset.[5] We may now rework Gordon's Table I and note that an asset promising receipts of $10 per year for thirty years would be worth $50 initially, and would decline to $49.985 at the end of the first year. At the end of ten years the asset would still be worth $49.23. After twenty years, two-thirds of the life of the asset, it would still be worth $44.63, having lost little over 10 per cent of its original value. Even after 25 years, our asset has lost an amount equal to less than a third of its original cost, its present value equalling $33.61. It is clear that with these parameters, measuring loss in value in this way instead of considering loss in productive capacity would not move us particularly far from the A-1 case which I associated with one-horse shays.

Similarly, it can be shown that Gordon's Table II when reworked in accordance with a *25 per cent* rate of discount and 30 year assets will show a loss of value over time which fits my general *A* category of assets declining at an increasing rate. Thus we will note in Table II*, which is entirely analogous to Gordon's Table II except for the changed parameters, that the value of the asset measured by Gordon's "economic life method," drops quite slowly when the asset is new. Indeed, when the asset has lived half its life its value has dropped only from $400.40 to $356.16, a decline of but 11 per cent.

Table II* indicates that in twenty of the asset's thirty years productive capacity expiration comes closer to economic life depreciation than does straight-line allocation. The mean deviation of straight-line allocation from economic life depreciation is $5.01; the mean deviation of expiration of productive capacity from economic-life depreciation is only $4.35. However, more important, when we consider the matter in the relevant context of growth in which I set the problem, we find that in every one of the first 13 years of the asset's life, expiration of productive capacity is a closer approximation to economic life depreciation than is straight-line allocation. It is only in the later years of the asset's life that substantial discrepancies between expiration of productive capacity and economic life depreciation develop. But the nature of the phenomenon of growth is such that older assets are not quantitatively as important as newer ones. For example, if the rate of gross investment were growing at three per cent annum (a rate of growth which Gordon indicates is acceptable, in footnote 10), and all assets had lives of 30 years, only 39 per cent of the assets on the books at any one time would be more than 15 years old. On the other hand, it is to be noted that the major part of the excess of straight-line allocation depreciation charges over economic life depreciation (as over expiration of productive capacity) occurs in the early years of the life of the asset, which, when assets of all ages are aggregated, brings about an "excess" of depreciation charges analogous to the one discussed in my article.

Gordon's final "receipts function" which he derives from the growth of the economy as a whole strikes me as arbitrary in the extreme. I fail to see a

[5] Assuming that annual returns are equal to unity, the discount ratio may be obtained by solving for s the expression:

$$\sum_{n=0}^{a-1} s^n = 5.$$

(6)

TABLE II*.—DEPRECIATION OF AN ASSET WITH PRODUCTIVE CAPACITY DECLINING AT AN INCREASING RATE

[Gordon's Table II reworked with assets of 30 years and rate of discount of 25 per cent:

$$C_t = \frac{807.8 - 1.25^{t-1}}{10} = \text{Receipts in the period t} \qquad (7)]$$

Period t	Receipts C	Present Values V	Depreciation Based on Productive Capacity R	Depreciation Based on Economic Life V	Depreciation Based on Straight-line Allocation D
1	$80.68	$400.40	$ 0.12	$ 0.75	$ 13.35
2	80.65	399.65	0.15	0.91	13.35
3	80.62	398.74	0.19	1.09	13.34
4	80.58	397.65	0.24	1.32	13.35
5	80.53	396.33	0.30	1.59	13.35
6	80.47	394.74	0.38	1.90	13.34
7	80.40	392.84	0.47	2.29	13.35
8	80.30	390.55	0.59	2.75	13.35
9	80.18	387.80	0.74	3.27	13.34
10	80.03	384.53	0.93	3.91	13.35
11	79.85	380.62	1.15	4.66	13.35
12	79.61	375.96	1.44	5.53	13.34
13	79.32	370.43	1.80	6.55	13.35
14	78.96	363.88	2.26	7.73	13.35
15	78.50	356.15	2.82	9.10	13.34
16	77.93	347.05	3.53	10.66	13.35
17	77.23	336.39	4.41	12.43	13.35
18	76.34	323.96	5.54	14.44	13.34
19	75.23	309.52	6.86	16.65	13.35
20	73.84	292.87	8.60	19.08	13.35
21	72.10	273.79	10.76	21.68	13.34
22	69.94	252.11	13.45	24.40	13.35
23	67.22	227.71	16.81	27.10	13.35
24	63.84	200.61	21.02	29.65	13.34
25	59.60	170.96	26.27	31.76	13.35
26	54.31	139.20	32.85	33.09	13.35
27	47.69	106.11	41.05	32.87	13.34
28	39.42	73.24	51.32	31.24	13.35
29	29.08	42.00	64.14	25.84	13.35
30	16.16	16.16	80.20	16.16	13.34
Total			$400.40	$400.40	$400.40

reasonable basis for translating increased productivity though the rest of the economy taken as a whole into increased costs of operating individual assets of individual firms. Implicit in Gordon's functional relation and parameters must be numerous assumptions about the distribution of an aggregative increase in productivity, the manner of technological change, the nature of obsolescence and dynamic price-cost relationships.

Actually, the expected receipts from certain capital assets may well decline

over time in the almost linear fashion indicated by Gordon's arbitrary function. For very many other assets they may not. This is something to be studied empirically, although it might be very difficult to go beyond accounting rules in imputing receipts to particular assets. In relating loss in value of assets based on a falling time path of expected future receipts to actual depreciation charges one would then have to reckon with depreciation charges as they are actually made for each asset. One might then find, as I suggest in my article in relation to declines in productive capacity, that many assets, the values of which declined in the manner that Gordon here indicates, would actually be covered by some form of "accelerated amortization" or of non-straight-line system of depreciation.[6]

ROBERT EISNER*

[6] I should add that I am a bit confused as to the nature of the distinction that Gordon makes between productive capacity and receipts. His reference to productive capacity which "expires little if at all over a period longer than the receipts life of an asset," is particularly puzzling. For aside from a general shortage of effective demand it hardly seems to make economic sense to refer to an asset as having productive capacity when it cannot be economically utilized.

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The Shape of the Average Cost Curve: Comment

With a recent article in this *Review*,[1] Professor Eiteman resumes his particular variant of antimarginalism and revives a controversy he had originally initiated in 1947.[2] Eiteman and Guthrie state that ". . . orthodox price theory is not valid if businessmen believe [their average total cost] curves to be shaped so that their least cost points are at or near capacity. . . ."[3] They find that the overwhelming bulk of businessmen questionnaire respondents do believe the shape of their average cost curves to be as thus described and therefore conclude that the replies "do not support marginal theory. . . . If the beliefs of businessmen in general coincide with those included in this sample, it is obvious that short-run marginal price theory should be revised in the light of reality."[4]

The logical structure of the Eiteman-Guthrie argument is clear. If business-

[1] Wilford J. Eiteman and Glenn E. Guthrie, "The Shape of the Average Cost Curve," *Am. Econ. Rev.*, Dec. 1952, XLII, 832-38.

[2] *Cf.* Wilford J. Eiteman, "Factors Determining the Location of the Least Cost Point," *Am. Econ. Rev.*, Dec. 1947, XXXVII, 910-18; Robert L. Bishop, "Cost Discontinuities, Declining Costs, and Marginal Analysis," *Am. Econ. Rev.*, Sept. 1948, XXXVIII, 607-17; Walter W. Haines, "Capacity Production and the Least Cost Point," *Am. Econ. Rev.*, Sept. 1948, XXXVIII, 617-24; Hans Apel, "Marginal Cost Constancy and its Implications," *Am. Econ. Rev.*, Dec. 1948, XXXVIII, 870-885; Wilford J. Eiteman, "The Least Cost Point, Capacity, and the Marginal Analysis: A Rejoinder," *Am. Econ. Rev.*, Dec. 1948, XXXVIII, 899-904; Walter W. Haines, "The Least Cost Point: A Reply," *Am. Econ. Rev.*, Dec. 1949, XXXIX, 1287-89.

[3] Wilford J. Eiteman and Glenn E. Guthrie, *op. cit.*, p. 832.

[4] *Ibid.*, p. 838.

men believe the least cost point falls at or near capacity, marginalism is not valid. Businessmen do believe this. Therefore marginalism is invalid and price theory should be revised. The initial postulate, however, that such beliefs on the part of businessmen vitiate marginal price-output theory, is as fallacious today as it was when first advanced in 1947.[5] The sole reason Eiteman-Guthrie advance to support their statement that such beliefs on the part of businessmen subvert marginalism is that when businessmen hold such views regarding cost behavior ". . . the short-run marginal cost curve for a product always lies below the average cost curve at all levels of operation short of capacity. The result is that the marginal cost curve cannot intersect the marginal revenue curve (1) if the average revenue curve is horizontal, or (2) if the average revenue curve is high and relatively elastic."[6] Eiteman-Guthrie thus take the well-known graphic marginal cost-marginal revenue intersection to be the crux of marginalism and declare orthodox theory invalid if that equality is not forthcoming in the usual manner.

Taking the replies of their respondents at face value, the following may be offered in rebuttal:

1. If the least cost point is believed to occur "near" rather than "at" capacity, the orthodox demonstration of the equilibrium position of the firm is likely to hold even to the relatively unimportant detail of graphic portrayal via the conventional marginal cost-marginal revenue intersection. For as soon as the average cost curve is admitted to start curving upward, even slightly, before termination at "capacity," the marginal cost curve, which rises above the average cost curve after the latter has passed its minimum value, shoots upward with great rapidity until, at capacity, it is likely to be far higher than the average cost curve. Thus the usual portrayal of the marginal intersection is likely to occur even if the least cost point is "near" capacity.[7] It is still possible, of course, that the demand curve facing the firm may be so high and elastic that marginal revenue never falls as far as the value of marginal cost at "capacity"; in this case we do not obtain the graphic marginal intersection in the usual manner and the example becomes substantially identical with that in which the least cost point is believed to occur "at" capacity.

2. If the least cost point is believed to occur "at" capacity, marginal cost will be equal to average cost at that output level and both curves will end

[5] *Cf.* the conclusive arguments of Bishop and Haines, cited in footnote 2 above. There is, in fact, little than can be advanced in refutation of the Eiteman view that has not already been stated by Bishop and Haines.

[6] Eiteman-Guthrie, *op. cit.*, p. 832.

[7] For a textbook graphic portrayal of such a case, in which the least cost point is placed at the extreme of *95 per cent* of capacity, see Allen M. Sievers, *General Economics* (Chicago 1952), p. 466. Sievers, in fact, uses this model as his typical firm throughout and encounters no difficulty in employing it to illustrate the conventional marginal cost-marginal revenue intersection in all of the customary market situations. Sievers' example is far more extreme than that illustrated by Eiteman-Guthrie's Figure 6, which they claim "does not support maginal theory"; in their Figure 6 the least cost point occurs at approximately 75 per cent of capacity. The corresponding marginal cost curve, which Eiteman-Guthrie do not draw, will rise to a value at capacity which exceeds the original value of their average cost curve as drawn.

there.[8] Thus, providing the demand curve facing the firm is sufficiently high and elastic, there will be no conventional marginal cost-marginal revenue intersection.[9] However, this in no way invalidates marginalism, of which the usual graphic intersection is but a superficial aspect. Marginalism is a deductive principle of the end-result to be expected from profit-maximizing behavior, merely claiming that the entrepreneur will, if possible, produce additional output if the added receipts expected exceed the added costs which it is thought will be incurred. (The identical conclusions can easily be demonstrated via the exclusive use of total cost and revenue, or average cost and revenue, with no mention at all of the marginal quantities involved.) Eiteman-Guthrie make no attempt to refute conventional marginalism thus stated; indeed, to do so they would have to show that firms operating under the posited nonintersection conditions would generally produce at *less* than capacity, for production at capacity output is in accordance with rather than a refutation of orthodox theory.[10]

3. We have seen many cases before in which there are discontinuous curves and in which no marginal cost-marginal revenue intersection exists. Continuous curves either (a) assume continuous data, or (b) are a distortion of reality in the interest of explanatory clarity. The fact that economists use such curves to discuss data that is essentially discrete does not invalidate marginalism; it merely means that the real world is more complicated than our "ideal-type" construct which is little more than a first approximation to reality.

4. If it is assumed (a) that businessmen attempt to maximize a single magnitude—money profit—or some complex of objectives which can be ordered on a scale and termed "satisfactory" profit or "net advantages," (b) that they have adequate knowledge regarding the relevant variables, and (c) that they act rationally, then the essentials of present-day marginalism are *already implied* regardless of the existence or nonexistence of the superficial marginal cost-marginal revenue intersection. Eiteman and Guthrie have concentrated their attack upon trivia rather than upon substance.

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[8] As Bishop has pointed out, strictly speaking the marginal cost curve ends in indeterminacy at capacity. Cf. Bishop, *op. cit.*, pp. 611-12.

[9] If the demand curve is not sufficiently high and elastic, we get the usual intersection of the marginal curves. Eiteman-Guthrie imply that declining average costs are, in some way, incompatible with marginalism, although they never state this view explicitly. That such is not the case can easily be seen by a perusal of any standard work, such as, for example, Joan Robinson, *The Economics of Imperfect Competition* (London 1933), in which most marginal cost-marginal revenue intersections occur during the phase of declining average costs.

[10] The definition of capacity by Eiteman-Guthrie as excluding all overtime work and payments is a partial begging of the entire question. Orthodox marginalism can offer an explanation of a failure to increase output and therefore can at least partially explain why at any one time some firms are and some are not producing *beyond* "capacity." It is not the purpose of this note, however, to disparage the usefulness of the questionnaire results *per se*, but rather to criticize the implications the authors draw therefrom, even if the survey is taken at face value.

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Comment

In a recent issue of the *Review* an attempt was made to controvert certain notions about the rôle of the firm's average cost curve by the procedure of questioning businessmen on the shape of the curve. The authors are clear to point out that they are not interested in the actual shape of the cost curve but rather in the opinions of businessmen as to the shape, since these are claimed to influence decisions as to output. It is not clear how seriously the authors regard the results of the survey. At successive stages the results are regarded as constituting an attack on "marginal price theory" (p. 832), "conventional marginal price analysis" (p. 837) and finally the much more modest goal of "short-run marginal price theory" (p. 838).[1] However, in a table summarizing the replies of businessmen, the authors classify cost curves as "supporting or not supporting marginal analysis," and place the majority of responses in the latter category.[2]

Replies by 366 out of 1,000 companies reveal that about 61 per cent of businessmen *believe* that short-run average costs "are high at minimum output, and that they decline gradually to capacity at which point they are lowest" (p. 835, see curve labelled 7). The replies of the other businessmen indicate a preference for a cost curve not too far from this conception. The authors interpret these results as substantiating their position against marginalism. They insist that:

> The reasoning of marginal price theory is valid if businessmen *believe* curves to be shaped as theorists assume, even though the curves are actually shaped as opponents contend; conversely, orthodox price theory is not valid if businessmen *believe* curves to be shaped so that their least cost points are at or near capacity, even though the curves really have the shape which conventional theorists maintain (p. 832).

If businessmen make decisions on the basis of a cost curve differing from conventional analysis, which contention supposedly emerges from their investigation, then they insist that conventional analysis must fall (or be revised?—see last paragraph, p. 838).

It is not clear to this writer what significance can be attached to this investigation or if any significance at all can be attached. It appears that the investigation contains misconceptions of marginal analysis, improper use of theoretical terms and errors of methodology.

1. Actually the authors have made no case whatever against marginal analysis. Behavior on the basis of their short-run average cost curves can be readily explained by the tools of marginal analysis, and R. L. Bishop did pre-

[1] The authors seem unaware that they have actually provided an evaluation of their investigation and that they have drawn implications that are anything but obvious. The authors should recognize that they fail to stick to their avowed purpose of describing the methods and reporting the results of their study (p. 833). This by itself would be innocuous, if unenlightening.

[2] In this classification the authors ignore Bishop's devastating criticisms of an earlier article by one of the authors. See R. L. Bishop, "Cost Discontinuities, Declining Costs, and Marginal Analysis," *Am. Econ. Rev.*, Sept. 1948, XXXVIII, 607-17.

cisely this in a rebuttal to a previous article by one of the authors.[3] Bishop indicated how the equality of marginal revenue and marginal cost must be replaced by more fundamental marginal conditions (expressing maximization of profits) to handle outputs where marginal revenue and cost, which are derivatives of the total revenue and cost curves, do not exist. This is the case at the point of minimum cost where the cut-off of the total cost and corresponding average cost curves prevent the existence and equality of both a right-hand and left-hand limit necessary for differentiability and the existence of marginal cost.[4] But this equilibrium output is still given by the more fundamental condition of profit maximization, which is what MR = MC is meant to depict for "normal" curves. The authors mention this latter condition only (p. 832) and thus foster the impression that this is what is meant by marginal analysis. But this is only true under the suitable differentiability conditions, and it is surprising that this would have to be reaffirmed after Bishop's adequate discussion.[5] In effect the authors nowhere present a test of either the assumptions of marginal analysis[6] or its predictions as to output and price policy. Apparently the authors are really testing a hypothesis as to cost and "capacity," which has no bearing on marginal analysis, but they never state the issues carefully.

2. An alternate interpretation of the article is that the authors reject marginal cost pricing in favor of what has come to be known as "full-cost" pricing. Their use of an average cost curve would seem to bear this out, and in particular their statements as to businessmen acting on the basis of what they believe to be the average cost curve reflect this belief, since in the short-run intrafirm equilibrating process it is only marginal curves that are relevant for price and output policy according to marginal analysis, and the position of the average cost curve is price-determined. But the authors make no attempt to relate businessmen's belief in their particular average cost curve to their actual behavior, and thus distinctly leave the impression that the average cost curve they depict is meant only to draw an inference as to the marginal cost curve (see p. 832, par. 1). The authors, however, are never really clear as to the respective rôle of the marginal and average cost curve in short-run (or any run) marginal analysis. In any case their presentation can be made compatible with marginal analysis, and in fact they do not reject the equilibrium output indicated by marginal analysis for their cost curves.

3. In their questionnaire the average cost curve is defined as "a line on a graph which shows the cost per product at each possible scale of operation from the minimum to the maximum *(excluding all over-time work)*" (p. 833). But overtime is surely an important way in which to effect short-run changes

[3] *Loc. cit.*

[4] R. Courant, *Differential and Integral Calculus* (New York, 1946), p. 97.

[5] *Op. cit.*, pp. 609-10. In implying that businessmen normally operate at minimum cost, where marginal cost in their assumed cost curve does not exist, the authors also imply a certain shape and position of the marginal revenue curve (p. 832). This hypothesis, however, is not tested in their questionnaire.

[6] As for instance stated in R. A. Gordon, "Short-Period Price Determination," *Am. Econ. Rev.*, June 1948, XXXVIII, 265-88.

in output. It should be pointed out that although the economist's cost curve depicts cost per unit product vs. rate of output, the rate must in practice be averaged over a large enough time interval so as to smooth over the effect of institutional time indivisibilities such as daily alternation of work and rest. Overtime then certainly does increase the rate of output and must be included in any analysis of the firm. The authors cannot define cost in a peculiar manner and then test a proposition as to the economist's cost curve, which is something different, on the basis of it.

4. Since fundamental errors in definitions and the conception of marginal analysis lie at the base of the study under consideration, it may be amiss to bring in a methodological point, but certain statements of the authors indicate a basic methodological misorientation with respect to the nature of a scientific theory such as marginal analysis. The authors feel apparently that for marginalism to be valid businessmen must somehow operate explicitly with revenue and cost curves and carry out the relevant marginal operations. This is more explicitly stated in a previous article by one of the authors where he states that a particular pattern of business behavior refutes marginal analysis since "In making such decisions, businessmen do not construct marginal revenue and marginal cost curves nor do they operate at a scale of operation that such curves would indicate if they were drawn."[7] I should hope that businessmen do not try to construct such curves at the present time, considering the time, effort and theoretical difficulties involved! Marginal price theory is not (at least yet barring the success of linear programming) a guide for businessmen to follow. Rather it is a theory explaining the behavior of firms whether or not they are aware of the theory; empirical tests relevant to the accuracy of output and price predictions are of course very much in order.

Moreover, it is not clear that what businessmen reply to a questionnaire constitutes a reliable guide to their actions. At any moment their scale of output is the end result of a complicated process of adjustment, most of which has been effected. Naturally any businessman might be expected to ignore most of this adjustment when queried and tend to oversimplify or misinterpret a present situation. At the very least an empirical study of business decisions should cover some period of time in order to trace the adjustment mechanism. It is thus an open question what significance a belief at a particular point of time has for business decisions. But I personally share Milton Friedman's skepticism as to the ability of most businessmen to accurately explain their behavior even over a period of time. Fortunately marginal theory does not require psychological introspection for its validity to be established; rather like any scientific theory it is to be judged as to the accuracy of the results it predicts.[8]

5. The investigation does not "contradict" marginal analysis. It does seem

[7] W. J. Eiteman, "The Least Cost Point, Capacity, and Marginal Analysis," *Am. Econ. Rev.*, Dec. 1948, XXXVIII, 899-904.

[8] See Milton Friedman, "Comment" on the essay by Richard Ruggles, "Methodological Developments," in B. F. Haley, ed., *A Survey of Contemporary Economics*, Vol. 2 (Homewood, Ill., 1952), pp. 455-57. See also a related comment in the same volume by A. G. Papandreou, p. 206.

to be faulty, however, even if interpreted on a more modest scale. No conclusion can be drawn as to the economist's average cost curve and its relation to capacity, since neither is adequately defined; and if the authors support "full-cost" pricing their questionnaire is not adequately framed to test this point. But it is not clear what significance can be given to businessmen's reactions in testing any conception as to price and output determination. The authors, however, are never clear as to what they are doing and what their terms mean, and their methodological misconceptions hardly constitute *the* point of criticism, as they might have otherwise.

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Comment

How unfortunate that the exotic and pugnacious pleasures of windmill-tilting have led Professor W. J. Eiteman to assert that the results of his unusually intelligent and unloaded questionnaire on the imagined shape of average cost curves constitute empirical refutation of something called "marginalism," an old enemy of his.

His results do overthrow the conventional U-shaped cost curves of conventional textbooks[1] and conventional review articles. Amen, and so much the better. But the U-shaped curves are not marginalism; they are merely pretty pictures, just as the hourglass figure is not the human female but the "foundation garment." We like our cost curves parabolic (*i.e.*, U-shaped) because it is so easy for the rudimentary mathematician to derive and visualize average-marginal relations from this particular shape. But marginalism as such assumes no curve types—U or V or W or any other. All are grist to the mill. Any of Eiteman's eight curve types is just as marginal (or just as antimarginal) as any other. His error lies in treating certain curve types as "supporting" and others as "not supporting" the "marginalist hypothesis." (References?) Strange things result. This writer, for example, considers himself a marginalist of sorts, albeit lukewarm and long-run.[2] Yet in classroom presentation, he likes to work with curves of the two types (6-7) found most realistic by Eiteman—and labelled "antimarginalist"! (What, in particular, is "antimarginalist" about the U-shaped type 6?)

The issue between marginalists and averagists in cost and price theory is a real one. Marginalism is not pure tautology, despite some unguarded statements by overenthusiastic proponents; it is perfectly possible for businessmen to act in an antimarginalist manner. Whether they do so act or not depends not on curve types but on whether they do (or should) base their price and output policies on marginal rather than average cost considerations, *when marginal and average costs diverge materially*. On this topic, the researches of Eiteman and Guthrie tell us little or nothing. And necessarily so, as a glance

[1] Among the notable exceptions is Lorie Tarshis' *Elements of Economics* (Boston 1946). Is Tarshis an antimarginalist because he foresook the U-shaped cost curve in favor of something like a beaver's front tooth?

[2] M. Bronfenbrenner, "Imperfect Competition on a Long-Run Basis," *Jour. Bus.*, Apr.

at his curve descriptions will show. The two most popular types (6-7) and one other type (8) are described so as to render AC and MC practically coincidental for most of the relevant parts of their ranges.[3] Where this is true, the whole marginalist-averagist controversy becomes a completely terminological or sham battle!

The empirical significance of Eiteman and Guthrie's results, as I see them, has nothing to do with the marginal controversy. Apparently the businessman's imagined zone of maneuver in adjusting output downward when price falls or when cost rises is conceived by the businessmen themselves as much smaller than textbook diagrams would lead us to imagine. Output restriction is cut off relatively early by rising costs in the case of curve type 7 (though not of type 6). Production must apparently stay at or near the least-cost point, regardless of cost or selling price, until the firm is forced out of business. Price changes are reflected directly and immediately in profit margins. This result, if borne out by further studies of this kind, rationalizes businessmen's antipathy to "chiseling," price-cutting, and "sales below cost" more easily than would the textbook world of U-shaped cost functions. But this is not antimarginalist. The conclusion, if valid, is as significant to a marginalist as to Eiteman, and equally conformable with his theory of cost.

M. BRONFENBRENNER*

[3] I refer to the use of terms like "slightly" and "gradually" in the descriptions. The divergence is actually quite marked for Eiteman's type 6 as he draws it. The drawing, however, appears to imply zero or negative marginal cost over part of the range, and the same is true of portions of certain other curves as drawn. Eiteman and Guthrie's arguments should not be judged on the basis of diagrammatic slips of this kind.

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Rejoinder

Rather than attempt a line-for-line reply to my critics, I shall try to meet the general purport of their comments.

First, it is pointed out that if the average cost curve starts curving upward even slightly, the marginal curve shoots upward rapidly, so that the conditions of marginal analysis are met by my curve No. 6. Mathematically this is true but businessmen do not know much about mathematics.[1] The description that accompanied curve No. 6 was intended to suggest a situation in which the least cost point was *so near* to capacity and the subsequent rise of average costs was *so slight* as to render the difference between curve 6 and 7 insignificant. In this respect the curve, as drawn, was deficient but discussion with a few businessmen who answered the questionnaire suggests that they interpreted the curve as I intended. If so, then the businessman who sets his

[1] Besides it should be borne in mind that the average cost curve is derived from the marginal cost curve rather than *vice versa*. That is to say, a marginal cost curve may rise slowly as capacity is approached; it does not have to rise rapidly. Those critics who howl so loudly at the omission of "overtime" (or beyond capacity outputs) had better consider the effect of slightly higher marginal costs of thousands of overtime products upon the average cost of millions of regular-production units, before venturing too far out on this theoretical limb.

scale of operations on the basis of inflowing orders and inventory limitations would ignore costs and would strive to expand production to the limit rather than to curtail output 1, 2, or 3 per cent short of the maximum.

Secondly, it is argued that all that marginal theory says is that business men seek to maximize profits. Unfortunately this is not all that marginal analysis implies, for the theory suggests also a technique for maximizing profits. It would be foolhardy to deny that businessmen desire maximum profits. My argument is that the techniques they employ do not work towards this goal even when their actual cost curve is U-shaped. Given a U-shaped cost curve and a relatively elastic average revenue curve, the most profitable point of operation is admittedly that scale of operations where marginal costs equals marginal revenue. However, in the world of reality, businessmen are not given "cost and revenue curves," and if they believe that their least cost point is at capacity when it is not, then the equilibrium point towards which they bend their productive efforts is capacity and not the point of equilibrium of conventional theory.

Thirdly, one critic admits that businessmen are not guided by considerations of marginal revenue and costs but he contends that the theory, when properly understood,[2] *explains* business behavior nevertheless. In those cases in which the "guiding principles" of businessmen happen to lead to the same result as conventional theory suggests, the explanation offered by conventional theory does not conflict with facts. However, in those cases in which the "guiding principles" of businessmen lead to a different result than conventional theory, the theory does not jibe with reality nor explain managerial behavior.

Furthermore, it must be remembered that theory is used to *predict* behavior as well as to explain it. For example, the question of the probable effect of a state income tax was raised recently in Michigan. The corporations said, "We will pass the tax on to the consumer in the form of higher prices"; a well-known economist said, "an income tax cannot be shifted."[3] Without entering into the merits of his argument, it will be recalled that the proposition that an income tax cannot be shifted rests upon an assumption that the sales price set by a manufacturer for his product is on the demand curve (it is the maximum price that could be charged for that quantity of the product). In theory no businessman would sell for less; in practice they do. It is dangerous to attempt to predict what businessmen will do by reasoning from theories that are based upon what businessmen do not do.[4]

In conclusion, the objective of an economist is not to draw pretty pictures

[2] A person who "does not understand" is obviously anyone who happens to comment on the discrepancy between theory and the facts of life.

[3] The president of one of America's largest corporations is convinced that his firm has always shifted the income tax to its customers.

[4] Marginalists seem to obtain a great deal of comfort from the fact that businessmen occasionally engage in marginal type thinking. For example, a firm manufacturing 9,500,000 products might weigh the cost of sufficient advertising to sell another 500,000 products against the profit to be obtained from the additional sales, before deciding upon the advertising expenditure. However, this is something quite different from setting prices and production schedules on such considerations.

on a black board suggestive of hourglasses, female figures and marginal theories, but to devise a theory (1) that *explains* and (2) that *aids in predicting* the behavior of businessmen under varying circumstances. In the area of current discussion this means explaining how prices are set and outputs determined in the short run.

Obviously the decisions of business managers who do these things are (1) arrived at without reference to principles or (2) based upon a body of principles. Kaplan admits that businessmen do not use his principles as guides. It is hard to believe that businessmen do not use any principles as guides. Therefore the proper procedure would seem to be: (1) to observe what businessmen do, (2) to reduce the observations to principles, and (3) to base predictions and explanations upon the application of these principles. Elsewhere I have suggested what might result from following such a procedure.[5]

One question remains: would the prices and outputs set by reasoning from principles that businessmen employ coincide with those that would result from an application of conventional theory? The answer is: occasionally yes but more frequently no. Hence my suggestion that "short-run price theory should be revised in the light of reality."

WILFORD J. EITEMAN*

[5] See chapters 3 to 6 of *Price Determination, Theory vs. Practice,* by W. J. Eiteman (Ann Arbor, Michigan, 1949).

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Review of *The Economic Development of Poland:* Reply

Mr. Mandel's review of my book, *The Economic Development of Poland, 1919-1950* (the December 1952 number of this journal), was so unfair that a reply is necessary. His treatment of my handling of the interwar Jewish problem in Poland is particularly objectionable because he clearly implies that I was at least sympathetic with the anti-Semitism of that period. I should like to make it quite clear that any such implication is entirely unfounded. Mandel charges that, in my book, "Everybody, from the United States to Hitler and Stalin, is blamed for Poland's sorry plight, except the Poles themselves; but more than anybody else—the Jews" (p. 32). But on the page of my book to which he refers, I listed six different sets of circumstances which complicated the handling of the basic economic problems of interwar Poland; and the Jewish problem, one of the six, received no particular stress as compared with the other five. There is no basis whatever for the charge that I *blamed* the Jews for anything. What I did say, on page 103 (the other reference which Mandel gave), was:

> Some industries were almost completely dominated by Jews, for example, 94.7 per cent of the textile industry and 95.6 per cent of the leather and fur industry. The typical economic position of the Polish Jew was that of the small entrepreneur, and the concentration of two-thirds of the Jewish population within the cities presented a difficult problem in a country which had over 60 per cent of its total population engaged in agriculture, since the position of Jews in commerce and handicrafts blocked the natural channels of economic expansion of the non-Jew.

Mandel complains that I gave no reference for the figures cited. He failed to mention, however, that on page ix (which he cites), I explained that I lost in transit some of my research notes which contained the sources of these figures. He also failed to mention the supporting view of R. L. Buell (*Poland: Key to Europe*, London, 1939) which I quoted on page 104.

Mandel also takes exception to my treatment of "vast movements of population" (page 157), and says that while I decried bitterly the forced evacuation of a million Poles into Russia, I said nothing about "the three million Polish Jews driven from their homes into Hitler's extermination camps." Again the implication is that of sympathy with anti-Semitism. But my book was on the economic development of Poland, and I had no occasion to tell the complete story of the treatment of the Jewish people. And Mandel failed to mention that, on page 164, I quoted from a League of Nations report: "The rations of Jews amounted to half of the insufficient rations granted to Poles; and when the Jews were officially considered exterminated, no further issues of rationing cards were made to them."

J. Taylor

Rejoinder

1. Taylor heads his list of the obstacles to the solution of Poland's economic problems with "The economic aspects of the Jewish question." The fact that this one was listed first indicates to me that Taylor regarded it as the most important one of the six.

2. The real reason that I objected to Taylor's use of data (to support his view of the Jewish question) without sources was that, upon the basis of figures given in the last Polish prewar census (1931), I had very real doubts as to the correctness of his data. Nor am I impressed by the figures given by Buell.

3. I should think that the murder of three million Polish Jews was of as great economic significance for Poland as the removal of one million Poles (including 300,000 Jews) to Russia.

A. Mandel

MEMORIAL

Emanuel A. Goldenweiser

1883-1953

Emanuel A. Goldenweiser died at Princeton on March 31, 1953. For forty years Mr. Goldenweiser devoted his exceptional talents to the public service. His contribution to central banking thought, and particularly to the development of research in which he was a pioneer in the Federal Reserve System, cannot be measured. He was recognized and honored as a foremost economist, notably in the field of federal monetary policy. He will be remembered for those attributes which were so aptly described by the Reverend Mr. Bodo, pastor of the First Presbyterian Church of Princeton, New Jersey, in the memorial prayer at his funeral service:

> We thank Thee for the gentleness of his spirit which set the tone for all his relationships, within the family circle, among friends and associates, and in the wide reaches of his travels among men and nations. We thank Thee for his mellow, civilized wisdom and for his gracious sense of humor, quick to laugh but slow to judge.
>
> We are grateful to Thee, O God, for his enduring influence in the lives of his loved ones and friends; for his ability to communicate to others, humbly and informally, that integrity which shone through all his conversation and all his dealings; and for his devotion to young men whom he inspired with high ideals for the service of the Nation and the human race.
>
> We bless Thee, our Father, for his high regard of public trust and for his sensitivity to social and economic conditions which can do so much to enrich or to debase life, and for his constant responsiveness to human need, both near and far.

Born in Kiev in 1883, Mr. Goldenweiser spent his early life in Russia. After graduation from the First Kiev Gymnasium in 1902, Mr. Goldenweiser emigrated to the United States and entered Columbia University. He received a B.A. in 1903 and took an M.A. at Cornell University in 1905 and a Ph.D. in 1907. In the latter year he became a citizen of this country by naturalization.

His early studies and work were in the field of immigration, to which he was led by his special interest in Russian migration—the subject of his doctoral thesis—and by his concern for the human and social problems which this movement created. After receiving his degree, he served for three years as a research worker with the U.S. Immigration Commission. From 1910 to 1914 he was a special agent in the U. S. Census Bureau and from 1914 to 1919 a statistician in the office of farm management of the Department of Agriculture. In 1919 he entered the employ of the Federal Reserve Board as associate statistician and in 1925 became assistant director of Research and

Statistics. In 1926 he was appointed director of Research and Statistics and served in that position until 1945 when he became economic adviser to the Board. In 1946 he retired from the Federal Reserve and became a member of the Institute for Advanced Studies. He left the Institute in 1949 but remained in Princeton, studying, writing, and acting as a consultant on monetary and economic policy to, among others, the Committee for Economic Development.

Activities outside of the demanding duties of his work for the Federal Reserve Board were largely of a professional nature. He was active in the American Statistical Association and the American Economic Association, serving as president of the former in 1943 and of the latter in 1946. His contributions to cooperative efforts in coordinating governmental statistical and economic research activities were almost continuous, including membership in the Central Statistical Board and other interdepartmental groups. With a broad knowledge of world affairs and a versatility in languages, he was often called upon to participate in international conferences and was a member of the International Institute of Statistics.

Mr. Goldenweiser's published writings include "Immigrants in Cities" (Vols. 26 and 27 of *Reports of Immigration Commission*), 1909; (with L. E. Truesdell) "Farm Tenancy in the United States" (U. S. Census), 1924; "Federal Reserve System in Operation," 1925; two research studies for the Committee for Economic Development—"Monetary Management," 1949, and "American Monetary Policy," 1951; and numerous essays and articles. Among the last group, outstanding are his two addresses as president of the professional associations, some chapters in *Banking Studies*, published by the Federal Reserve Board in 1941, and "Jobs," the first of the series of *Postwar Economic Studies* published by the Board in 1945. It was largely, however, through unsigned articles in the *Federal Reserve Bulletin* and to a great extent through unpublished memoranda, off-the-record speeches, and just spontaneous comments that Mr. Goldenweiser made his greatest contributions to knowledge and understanding.

Mr. Goldenweiser made an outstanding contribution to the general recognition of the importance of economic analysis in government policy making. The progress of the Division of Research and Statistics and of economists generally throughout the Federal Reserve System is one institutional piece of evidence of this fact. His work in inspiring and assisting interdepartmental cooperation in the field of governmental statistics is another. He also played an important rôle in the establishment of the International Monetary Fund and the International Bank for Reconstruction and Development. One incidental by-product of the last was his successful insistence on the creation of the N.A.C. (National Advisory Council on International Monetary and Financial Problems) to coordinate U. S. international monetary and financial policy—today the outstanding example of effective interdepartmental cooperation in government policy formation.

WINFIELD W. RIEFLER
WOODLIEF THOMAS
RALPH A. YOUNG

BOOK REVIEWS

Economic Theory; General Economics

The Theory of Economic Policy in English Classical Political Economy. By LIONEL ROBBINS. (New York: St. Martin's Press. 1952. Pp. xii, 217. $3.00.)

This new book from the pen of Professor Robbins is a major event in contemporary economic literature. It touches upon the great issues of our science, and its treats of the towering figures from Hume to Mill who gave form and substance to economics.

Robbins' principal concern is the right interpretation of classical economics. The conventional picture of that era he finds distorted by the rise of a mythology that has turned the classical masters into caricatures—apologists of exploitation and opponents of social reform, who gloat over subsistence wages, care little for the welfare of the common people, and limit the government to the rôle of a night watchman. Robbins' aim is the restoration of the true picture of classical economics. This aim he pursues, in the main, by tracing the attitude of the classical economists on questions of public policy. The basic theme is introduced by a discussion of their view concerning the ends of economic activity and the system of organization most suitable for the realization of these ends. This is followed by a detailed appraisal of their theory of the economic function of government, and of their attitude toward popular welfare and collectivism. In the concluding chapter the classical movement is viewed as a whole from the wider perspective of the history of social philosophy.

Robbins' restoration of classical economics is a superb accomplishment. The picture which he unfolds on no more than 200 pages is far superior to the corresponding parts of the ordinary textbooks. His work is that of an analytical economist, and invites comparison with Cannan's masterpieces in its power of sustaining the argument in a systematic fashion.

How then does his argument run? The classical economists, he points out, considered consumption as the object of economic activity. With the end thus determined, they further held that it was best attained by means of a system of spontaneous cooperation. They are shown to have been public-spirited men rather than exponents of class interests. The harmony of interests which they claimed for their system was strictly limited. They were not indifferent to the fluctuations of trade, and in their speculations about money and credit they did not adhere to the belief in an automatic order that would not require regulation. Indeed, they recognized a substantial range of governmental functions, having been inspired by utilitarian empiricism rather than by the more dogmatic ideas of the physiocrats concerning a natural order. They did not view the system of economic freedom as a spontaneous or "natural" creation but as an artifact requiring conscious and sustained efforts to make it function properly. Interference with the working of the market

was conceived to be harmful only when the market conformed to their postulates. Interference with price or supply was accepted for public utilities and other monopolistic situations as well as in cases of special weakness of ordinary economic incentives. In the field of distribution, their works contain schemes proposing the drastic limitation of the inheritance of wealth. In the field of population, the gloom spread by Malthus' first *Essay* was dispelled by the possibility of improvement envisaged in subsequent editions. The classical economists recognized public functions in popular education and health care. They felt uneasy about the poor laws. Their works contain passages favoring restrictions on child labor and repeal of the anticombination laws. They did have misgivings about trade unions and collective action in general.

Having thus sketched the classical economists' system of economic freedom, Robbins goes on to explore their attitude toward socialism. Among the older generations of classical thinkers, from Hume to Senior, he finds only sporadic or implicit manifestations of attention to an issue which at their time was not fully joined. He refers to Hume's emphasis on private property and rejection of egalitarianism, to Smith's distrust of the central direction of economic activities, and to the similar views of Bentham; to Malthus' rejection of Godwin's egalitarian anarchism and of Owen's collectivism; to the critical attitude of the Ricardians toward Owen; and to Senior's verdict on the French revolution of 1848. Robbins then turns to John Stuart Mill, the only classical economist who concerned himself with socialism in a more systematic fashion. He interprets the apparent changes in Mill's attitude with profound understanding of Mill's complex character.

In his concluding appraisal of the general position of the classical group, Robbins emphasizes its character as a school of economic and social reform, which derived its prescriptions from utilitarianism and from a systematic body of scientific knowledge—the emerging science of political economy. Fundamentally, the utilitarianism of the classical economists was individualistic both with respect to means and to ends. It recognized, however, a substantial range of governmental functions as a prerequisite for the proper working of the individualistic organization of production. What then, and this is the last question posed by Robbins, was their view about the most desirable form of government? From Hume's philosophical conservatism the road leads to indifference in the youthful Bentham, later to give way to an appeal for representative democracy. To some this meant universal suffrage, and, while others pleaded for the maintenance of property qualifications, Mill came to favor a system of proportional representation combined with plural voting based on function and education. Robbins interprets this view as the expression "of an underlying anxiety, a scarcely suppressed fear: will the democratic society of the future have restraint enough to preserve the sacred liberty of the human spirit, and wisdom and self control enough to ensure its own progress and stability?—a momentous question to which, as yet, time has not given a convincing answer" (p. 205).

There is no need to elaborate further that content and form mark Robbins' book as a contribution of the first order to the history of economic ideas, a

field which has attracted only a few of the best minds among contemporary economists. It would be a difficult task to find an economist writing a prose more pleasing and persuasive than Robbins, and none combines a happier blend of urbanity and integrity. His present book, the product of lectures, has the inimitable charm of the direct address. Its value is enhanced by a wide selection of quotations from the original sources, by occasional references to an oral tradition now in danger of extinction, and by the light which it sheds on all but forgotten evidence on specific points (*e.g.*, the testimony of Pryme, cited on p. 121, which corroborates Bishop Otter in his preface to the second edition of Malthus' *Principles*). Also, the proper amount of attention is given to the economic ideas of Hume and Bentham, writers whose importance in the history of economic thought calls for more profound treatment than is usually accorded to them in secondary materials.

As Carl Menger pointed out over sixty years ago, the classical economists had the sad fate of having their history written by their opponents. Some thirty years later, Viner, in the sort of penetrating analysis for which he is famous, again established beyond all doubt that Adam Smith was not the doctrinaire advocate of *laisser faire* that he is so widely believed to have been. When all is said and done, one can but wonder at the persistence of a mythology which has been exploded at least once in every generation. The exploration of the factors which have contributed to so deeply rooted a misunderstanding might be an interesting task for a student of the sociology of knowledge. Let us hope that Robbins' work proves the definitive one, or, if it does not, that to the next generation of economists there will come again as civilized an appeal against an apparently perpetual wrong.

HENRY WILLIAM SPIEGEL

The Catholic University of America

The Rate of Interest and Other Essays. By JOAN ROBINSON. (New York and London: Macmillan. 1952. Pp. viii, 170. $2.00.)

The title of Mrs. Robinson's latest book is curiously modest since one of the "other essays" is entitled "The Generalization of the General Theory." Her main effort is to break through the short-run Marshallian confines of the *General Theory*. She frankly acknowledges her great debt to Harrod[1] and like him puts her faith in a marriage of the Keynesian statics with the classical dynamics. (From the present point of view it is irrelevant that he reads Ricardo while she reads Marx.) She has completed her long struggle of escape from Marshall. Her recognition of Kalecki as an independent discoverer of the *General Theory* is an overdue tribute from Cambridge to that distinguished economist.

Perhaps because of its scope and the difficulty of its subject matter, this book lacks the crisp lucidity of Joan Robinson's earlier work. That is one reason for the belatedness of this review. While one is continually impressed with her insight and shrewdness along the way, it is difficult to appraise the whole. In this review I shall attempt first to set out the various propositions

[1] R. F. Harrod, *Towards a Dynamic Economics* (London, 1949).

that she seeks to establish and then to make some comments on the work as a whole. In doing so, I shall take some liberties with the order in which she presents her ideas.

Her main theses, stated either directly or by implication, are:

1. Uninterrupted and steady economic growth is possible, but there are no economic forces at work that tend to establish it. On the contrary, the vicissitudes to which the economy is exposed would disturb the steady rate of growth even if it were achieved by accident.

2. These vicissitudes generate either booms or depressions. Booms continue till some "bottleneck" is reached. Depressions descend to a not too clearly defined floor.

3. The "business cycle" is a succession of responses to such vicissitudes rather than the result of a self-perpetuating tendency of a private-enterprise economy to fluctuate.

4. The rate of interest cannot be made to function as a regulator of economic activity that will ensure a steady rate of growth.

5. The course of innovation may affect the distribution of income in directions favorable to capital, or favorable to labor, or it may be neutral in its effects.

6. There is no especial virtue in a steady rate of growth. In particular, it may be associated with increasing unemployment.

Let us now consider these points in some detail.

1. The condition for a steady rate of growth is essentially the familiar Harrod-Domar requirement that the rate of growth of income or investment be appropriately related to the coefficient of capital requirements and the marginal propensity to save. In Harrod's terminology, $G_wC_r = S$, where G_w is the "warranted rate of growth," C_r denotes marginal capital requirements, and S is the marginal propensity to save, with technical progress assumed to be neutral.[2] This condition is simply an elaboration of the condition that for steady growth the normal increase in savings and the normal increase in investment must be equal.

The authors assume that the three factors involved are independent of each other and that if the steady growth of the economy is disturbed by some shock or irregularity there will set in a cumulative movement towards boom or depression with no tendency to return to the condition of steady growth.

Balanced growth must clearly require some degree of consistency among rate of growth, investment per unit of output, and saving. But to pin so much faith (or cynicism) on this particular formula is to go too far. In the first place, the formula is based on the modern revival of the old fashion of assuming "fixed coefficients"—which means throwing overboard the one important achievement of the neoclassical economics. Secondly, as Mrs. Robinson clearly recognizes, the concepts rate of growth and capital requirements are essentially vague. This vagueness is reflected in the statistical difficulties involved in their computation and is obscured by the precision with which the results are

[2] See *The Rate of Interest*, p. 93, and Harrod, *op. cit.*, Lecture 3, for full exposition of these conditions.

presented or discussed. If the analysis were presented with a clear recognition of the width of the confidence intervals surrounding the factors in the equation, it might create a very different impression.

2. I find Mrs. Robinson's discussion of "vicissitudes" one of the most useful and stimulating parts of the book. Her treatment of the supply of land has an attractive Ricardian ring—although she is concerned with the effect of land scarcity and rent on the Keynesian propensities rather than on the Ricardian wage-profit relation. She concludes her discussion of thriftiness with a welcome degree of scepticism about the existence of long-run tendencies toward under-consumption. Her discussion of population increase leads to the uncomfortable result that unemployment may result from rates of population increase that are too rapid or too slow. The discussion of finance, the emphasis on the distinction between finance and saving, and the relation between them are all valuable contributions to economic analysis. On the other hand, her de-emphasis of the price system is hard to get used to.

I am puzzled by the relation intended between Mrs. Robinson's list of vicissitudes and the booms and depressions they are supposed to explain. Most of the vicissitudes seem to be of the kind that would occur gradually over a long period of time. Yet they are essential elements in her explanation of the booms and depressions we associate with the business cycle. On the other hand, the notable exogenous disturbances, particularly wars and their aftermaths, which undoubtedly do produce booms and depressions, are not mentioned at all.

3. Mrs. Robinson is unsympathetic with attempts to establish the existence of business cycles. She states:[3]

> In those theories which purport to find a cyclical mechanism in a private enterprise economy, I have the impression that the weakest chapter is always the one which treats of revival from a depression. And it seems to me that this is no accident. I take leave to doubt (though with all due hesitation and reserve) whether there ever has been a trade *cycle*—that is, a self-perpetuating cyclical movement, as opposed to a series of fluctuations due to the propensity of a private enterprise economy to exaggerate its response, either way, to the chances and changes of history as it meets them.

Presumably, this point of view leads Mrs. Robinson to treat the third distinguished member of the Harrod family, Hicks' *Trade Cycle,* with scant attention. And while praising Kalecki, she pays no attention to his pioneer work in business cycle theory.

The lack of a theory of the mechanism of the business cycle leads Mrs. Robinson to the view that an expansionary vicissitude leads to a boom that ends in a bottleneck. A contractionary one leads to a depression (with limits not clearly defined). The only inkling of the mechanism of an expansion crisis and collapse we are given is contained in two short paragraphs:

> When the rate of investment rises relatively to what it has been in the recent past, consumption increases, in accordance with the short-period

[3] P. 142.

> marginal propensity to consume, and there is a secondary wave of investment in working capital, and a further increase in consumption. Now in some lines producers find themselves in a seller's market (demand exceeding capacity) and the optimists among them (or those with strong animal spirits) acting on the assumption that the demand will last, place orders for equipment to enlarge their capacity. So the upswing in investment amplifies itself.[4]
>
> At some point the rise in the rate of investment reaches a limit (we shall return to this point in a moment) and income reaches a maximum. Meanwhile new plants have begun to emerge from gestation; soon there is more capacity to cater for a rate of outlay that has ceased to rise. The sellers' market disappears (at best capacity only just catches up with demand—more often it overshoots the mark). The rate of investment therefore falls off, income declines, and the boom collapses.

The subsequent depression ends when something turns up:

> It seems to me that the most plausible theory of the revival is Mr. Micawber's: given time, something will turn up. That is to say that a depression will not last forever because some fresh opportunity for investment is bound to present itself sooner or later.[5]

With respect to bottlenecks, Mrs. Robinson rejects full employment, finance and land as ruling factors and concludes that industrial capacity is the crucial bottleneck. Her demonstration of this point is intuitively plausible but not logically convincing. She gives no compelling argument why resources cannot be shifted from increasing the output of consumers goods to increasing capacity—if capacity becomes short. If that can be done, the boom can continue so far as this particular bottleneck is concerned.

While I sympathize with Mrs. Robinson's aversion to an overformalized business cycle theory, I feel that her own discussion leaves far too much to be explained. I invite the reader to decide for himself how well her theory fits the facts of the last thirty years.

Mrs. Robinson is particularly concerned to demonstrate that interest rates will not serve as a stabilizer of the economy. First of all she emphasizes the point that will be widely accepted: that automatic adjustments of interest rates cannot be relied upon. While the process of inflation will raise the market rate if it happens to be below the full-employment rate, there is no effective mechanism to reduce a market rate that is higher than the full-employment rate. And deliberate action by governments to that end may do more harm than good if the authorities lose their nerve.

But even if the authorities do take action, the effects are likely to be less than is commonly supposed. Mrs. Robinson believes that we have been misled by our habit of thinking in terms of a single rate of interest. When the whole structure of rates is considered, she contends that increases are likely to be ineffective in controlling a boom. She reaches this conclusion largely as a result of including the yield on stocks as part of the complex of interest rates.

[4] Pp. 126, 127.

[5] P. 142.

(It will be remembered that Keynes in the *General Theory* included the yield on stocks in the marginal efficiency of capital side of the picture.) Mrs. Robinson argues that as an upswing progresses the yield on shares tends to fall, even though other interest rates increase. Consequently, businesses can raise capital on increasingly favorable terms so that the interest rate structure places no impediment in the way of a boom.

With the modern separation of management from ownership, the yield on shares undoubtedly bears some kinship to interest rates, and this should be recognized. On the other hand, the reason why the yield of shares declines in the upswing is simply that shares do represent an equity in the business and this distinguishes them from fixed interest-bearing obligations. The only adequate nomenclature is one which recognizes the equities as a separate category, to be identified neither with fixed interest contracts nor with investment in plant and equipment.

The existence of equities as a separate category probably does diminish the influence of increases in interest rates in checking a boom. But it need not eliminate that influence. The monetary measures that raise interest rates also render the yield on shares higher than they otherwise would be. There is no danger that monetary restriction will aggravate the boom.

The real point about monetary policy seems to be that, because of timidity or good judgment, the monetary authorities are unwilling to go far enough to stop booms or to cure depressions. But central bank operations on the scale required may have consequences that can only be discovered by experiments that no one is willing to undertake.

My concern with these major points prevents me from doing justice to Mrs. Robinson's elegant treatment of expectations and her interesting paradoxes such as "a rise in the rate of interest which is expected to be reversed is a greater deterrent to investment than one which is regarded as permanent."[6]

5. The chapter on the Economics of Technical Progress seems to me to be the least satisfactory in the book since it is almost entirely devoid of empirical content. The rest of the book is based on premises that the author believes to be true and which critics can attempt to refute. This chapter defines various categories of innovation and traces their economic consequences. But it makes no attempt to predict the kinds of innovation that will actually occur. While the definitions are useful and provocative, we are about as we were with respect to our knowledge of the effect of technical progress on the distribution of income. This is a field which I fear the theorist may have to yield to the historian.

6. The steady rate of growth as formulated by Mrs. Robinson or Harrod may be associated with increasing or decreasing unemployment and increasing or decreasing inequalities. Capitalistic development is governed by "fixed coefficients" which relates the behavior of the system as a whole to the character and extent of investment. And the nature of the growth itself is apparently uniquely determined, although not explained by Mrs. Robinson's system. She does not inquire whether public policy can achieve a steady rate

[6] P. 121.

of growth that is desirable in other respects. I surmise that she is too much of a Marxian merely to indulge in wishful thinking and not enough of one to accept the full implications of the deterministic position.

Apart from these comments on the positive aspects of Mrs. Robinson's theory, there are two general sins of omission to which special attention should be drawn.

In the first place, through her neglect of the relative price system, she may have neglected an important stabilizing influence in the economy. It is possible that the behavior of relative prices and the principle of substitution produce a tendency towards general equilibrium that holds fluctuations within reasonable bounds. The extraordinary stability that the American economy has shown since the war lends color to this view and leads to the hope that the depression of the 'thirties may not have been a normal occurrence of the later stages of capitalistic development. I have no desire to become labelled an anti-aggregator. We must think in terms of reasonably broad aggregates in order to think at all about major economic questions. But it is equally important to remember that we are dealing with nonhomogeneous aggregates whose behavior cannot be appraised unless we keep the workings of the relative price system not too far in the back of our minds.

Secondly, Mrs. Robinson does not discuss the central question of entrepreneurial motivation. Schumpeter, Keynes, Marx, and Marshall all provide theories, although conflicting ones, of what leads entrepreneurs to invest or innovate. Mrs. Robinson (and Harrod) merely provide a mechanism and do not tell us what determines how hard the entrepreneurial foot is pressed on the accelerator. While theories of entrepreneurship are eminently unsatisfactory, I do not see how we can escape the need to select the hypothesis that is least likely to be wrong or which will lead to the least undesirable consequence if it is wrong.

I confess that I conclude this review with a less sympathetic view of Harrodian dynamics than I had when I began it. The three protagonists, Harrod, Hicks, and Robinson, with essentially the same tools of analysis, reach widely differing results. Harrod finds a chronic tendency to underconsumption. Hicks discovers at the end of his book that the real trouble is monetary and that if policy could confine fluctuations to his "real" cycle all would be well. Mrs. Robinson paints an agnostic picture of capitalistic instability. While they all deserve great credit for recentering attention on economic growth, the *General Theory* has not yet been successfully generalized.

ARTHUR SMITHIES

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Die Theorie der Einkommensverteilung. Entwicklung und heutiger Stand. By VIKTOR ZARNOWITZ. (Tübingen: J. C. B. Mohr (Paul Siebeck). 1951. Pp. 275.)

The history of economic doctrines, as a method of training economists and as a subject of study, has declined in relative importance during recent

decades. This is an almost inevitable consequence of the rapid growth of economics as a specialized science, but it has probably meant some loss in perspective. Moreover, it may be argued that the writing of doctrinal history is a task for mature economists with long working knowledge of their special fields, rather than for a young man. Dr. Zarnowitz attempted a survey of the theory of distribution as a doctoral thesis. But although he may wish to rewrite (and shorten) it in twenty years' time, he has done a useful service, particularly to the German-speaking economist, in presenting and analyzing German as well as recent Anglo-American contributions to the subject which cannot be well-known in Germany. The older classical theories of distribution are dealt with rather cursorily, and the book really begins with the theory of imputation developed mainly by the Austrian school of economists, which shades over, however, into the modern theory of marginal productivity. The conceptual framework of this theory is analyzed in much detail, both in its micro-economic applications for conditions of perfect and monopolistic competition, and as a method for determining the share of factors in the national dividend. The partial analysis follows familiar lines and is undoubtedly competently done. The author takes, on the whole, the position which Machlup had developed in his criticism of Lester's empirical studies. It certainly makes the logic of micro-economic theory of marginal productivity unassailable, but does it not destroy at the same time its scientific character, by making verification well-nigh impossible?

The determination of absolute and relative factor shares runs into heavy weather as soon as the classical assumptions of perfect competition and full employment are relaxed. The author is fully aware of the difficulties and stresses the need for further work, particularly on the special factors influencing the price formation of factors of production. He analyzes, for instance, in connection with Oppenheimer's theory of the agricultural frontier, the importance of the unequal distribution of wealth for the supply conditions of the labor market and the tendency for given distributions to reproduce themselves. There are interesting discussions about different distributional principles in different economic systems, but this last part of the book is on the whole less rigorous and less well-planned than the earlier chapters, and could be omitted without much loss. It would be wrong to hold this against the author, who has certainly proved his competence and skill in the field of distributional theory.

Frank Burchardt

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Unternehmergewinn und Arbeitslohn. By Erich Carell. (München: Richard Pflaum Verlag. 1950. Pp. 176. DM 19.50.)

Professor Carell, like many other economists, is dissatisfied with the development of the theory of profit since Marshall, and turns in particular against numerous attempts to explain profits as a residual income imputable, say, to entrepreneurial ability. The premature introduction of subjective factors in his view undermines the objective basis of such fundamental con-

cepts as the optimum size of the firm, or the optimum combination of factors, and hence the very notion of equilibrium. Profit is not the reward for a factor of production, be it risk or entrepreneurship or management. Payments for risk taking, interest on capital, or rent, and for management, are rightly included in the average cost curve. Profits (*Unternehmergewinn*) can only arise through objective economic changes, and the change the author considers at length is the gradual introduction of technical innovations. The analysis assumes perfect competition, price flexibility and mobility, and is conducted in terms of comparative statics. When the system is in equilibrium, all firms within an industry will use the same factor combination and be of equal size. Excess profits will be zero for all firms. Assuming neutral money, technical progress will secure differential profits for the pioneers which will, however, be matched precisely by losses of other firms, so that profits for the economy as a whole in these "dynamic conditions" are again zero. Loss firms will not fully recover their depreciation allowances but the differential profits of the pioneer firms will be enough to keep aggregate capital intact in money terms. Prices will, of course, fall with the increase in output associated with technical improvements. Real factor incomes will rise and so will purchasing power of capital that has been maintained constant in money terms. There will be neither over-employment nor under-employment throughout the process of adjustment. Marginal producers will continue as long as they cover variable cost, and loss firms can only introduce new machinery when their depreciation allowances, augmented by differential profits of other firms, are sufficient to enable them to buy new equipment. As technical improvements spread to other firms prices will fall further, and the system will come to rest only when all firms are working again with the best technique and all profit differentials have been wiped out.

Given the explicit and implicit assumptions of this model, most of the deductions seem to follow logically. In fact so perfect appears the working of this simplified model that Carell uses it as a norm for economic policy. If, for instance, a policy of neutral money is abandoned and technical improvements are accompanied by credit expansion designed to keep prices stable, real wages will fall, higher profits will accrue to the pioneers, while marginal producers will not make losses. On the stringent assumptions of the model this is, of course, a *non sequitur* since credit expansion will simultaneously affect commodity prices and factor prices and hence inflict losses on the marginal producers. The assumption of a sluggish response of wage rates to monetary expansion in a situation of full employment may or may not be realistic, but it seems to introduce time lags which otherwise are consistently kept out of the system.

Carell is, of course, in good company when he uses his simple logical system as a stick to beat all the sinners of the real world: monopolistic practices, government interference, credit policy, and so forth. But it might have been more instructive if he had relaxed some of his over-simplified assumptions and investigated, for instance, technical improvements requiring more capital per head, or capital-saving inventions, or the effects of varying rates of innovations on the system as a whole, or the impact of innovations in conditions

of underemployment. His analytical base seems to the reviewer to be too narrow to carry the policy implications which are drawn from it.

FRANK BURCHARDT

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Dimensions de l'homme et science économique. By JEAN-LOUIS FYOT. (Paris: Presses Universitaires de France. 1952. Pp. 355. 1400 fr.)

The volume under review is one of a series of publications issued under the auspices of the Bibliotheque de Philosophie Contemporaine of Paris, France. The numerous publications of the Bibliotheque appear to fall into the following categories or sections: Psychologie et Sociologie, Historie de la Philosophie Generale, Morale et Valeurs, and Logique et Philosophie des Sciences, in which last category Fyot's contribution takes an honored place.

In a delightfully written preface Fyot informs his readers that Aspects of Man and Economic Science (free translation of the French title) is not a review of historical economic thinking but rather an examination of contemporary political economy. He proposes to deal only with problems which have continually faced mankind regardless of whether or not these problems have been examined in scientific studies. His justification for this position is that contemporary problems embody problems universal in time and therefore their treatment does not require a review of various economic schools.

Following the Preface comes a lengthy Introduction in which he considers what he deems to be the two chief phases of economic thought, liberal individualism and the socialism of Marx. He pays his respects to the Physiocrats, yet holds that it is with Adam Smith and J. B. Say that political economy finds itself promoted to the rank of an exact science. Passing to Karl Marx he asserts that Marx pretended to erect a science of economics which would at the same time be a philosophy of man but wound up by working out an economic system which absolutely contradicts man's aspirations.

By far the major part of the volume is devoted to the social, individual and human aspects of man and economic science. In Part I, under the head of The Social Aspect, he notes the underlying relations between producers and consumers, stressing the reciprocal dependence of economic functions and the solidarity existing between producers and consumers. Toward the end of this part he takes up theories of general equilibrium and disequilibrium and concludes with a thoughtful study of the interdependence of nations.

Part II, entitled The Individual Aspect, begins with an account of the economic calculations and behavior of individuals, discusses the planning procedures between which entrepreneurs must choose, goes at length into the topics of private and national saving and investment, and ends with a presentation of the difficulties posed by international economic fluctuations.

In Part III, where the author deals with The Human Aspect, he feels constrained to remark that the concrete limits of political economy, as a science, are at bottom those of the economic subject himself within his objective mani-

festations. Here we run into the insuperable difficulty that there is no rule of conduct to which man conforms. He refuses to act in accordance with the dictates of reason. Since both the agents and the ends of economic research are concerned with human behavior, he further maintains, all hope that political economy can ever become an exact science must be abandoned. Economic laws, as rules of conduct, can never pretend to come to the exactness, for example, now approached in the laws of the physical and chemical sciences. Like the moral or juridical sciences in which man's behavior constitutes the center of research, political economy is thus by its very nature a normative study. Incapable of satisfying to the full his individual and social aspirations man is perforce obliged, under penalty of violating the laws of human conduct, to pursue incessantly an ideal which he knows is inaccessible.

Is there accordingly no answer to the enigma of man's destiny? This question remains without an answer, he replies, unless the answer is found in the love of God. The existence of a God who is Love, and whose love provides the same bond between man and man and between man and nature as between man and God, guarantees by His transcendence no less than by His eminence the worth of efforts undertaken to promote, here below, the demands of love inscribed in the hearts of human beings, of which demands economics has revealed to us one phase. Is not the love of God, he concludes, the ultimate question with which the economist and the philosopher ought to concern themselves in their research?

The subtle and elusive rôle which normative concepts and ethical preconceptions have played in economic thought from antiquity to the present time is a rôle that has long enlisted the attention of not a few gifted thinkers. No volume has come to my notice which attempts with greater care the extremely difficult task of treating all the social sciences as inevitably ethical in content and character. That Fyot's deft analysis is by no means the final answer, in my opinion, to the issues which he has raised is in no way a reflection upon the artistry with which he has endeavored to resolve a problem which is possibly unresolvable. Thoroughly documented, with evidence throughout of a broad and sympathetic understanding of economic literature, and written with typical Gallic charm, his book is an admirable example of the emphasis which should rightly be laid upon the human aims of the economic system, an emphasis, incidentally, with which few will quarrel.

John M. Ferguson

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An Introduction to Economic Analysis. By J. K. Eastham. (London: English Universities Press, Ltd. 1950. Pp. vii, 392. 15*s.*)

A Course in Applied Economics. By E. H. Phelps Brown. (London: Sir Isaac Pitman & Sons, Ltd. 1951. Pp. viii, 434. $5.75.)

The writing of textbooks in elementary economics seems at times to be a rather distinguished form of "disguised unemployment." There is practically no marginal social net product, and one would guess, very little of the private.

Freshness of material, novelty of approach, and distinction of style are missing, and about all that is done is to change the chapter order, and to substitute 1952 data for 1951 data so that the publishers can proclaim that their offerings are "timely." But books such as the two here reviewed cannot be dismissed on these terms. They are new; they have been written because their authors felt that they would meet a need not now recognized; they are clear; and without doubt they are both useful. Neither may serve adequately as one of the books to be given to beginning students, but both deserve careful consideration. And for American use each can be strongly recommended for certain courses above the elementary level.

Mr. Eastham's *Introduction* packs into a relatively small space (about 400 pages) a great deal of what goes by the name of economic theory, at both the micro- and macro-economic level. By this I mean that it introduces the reader to most of the economist's tools of analysis—to indifference curves, the marginal productivity function, to the marginal revenue when a monopoly discriminates, the marginal propensity to consume, and many others. What it does not do, and for many this will prove a serious omission when they consider adopting the book for an elementary course, is to show the uses to which these analytical tools can be put. It is a book about economic theory rather than about an economy. And for this reason it is difficult without being, at the same time, rewarding—at least for use in this country. It would be a valuable reference book for students who have gone well beyond the introductory course and who have got the feeling of what economics is all about, but to use it at the beginning level would mean deadening the interest of most students, and giving to the rest a false picture of the subject. Despite this, it is a distinguished book which, though it fails in its announced aim (for the American beginner, anyway), rarely says a wrong thing. (But is it true that the rejection of Say's law depends mainly upon the fact that the process of supply is not instantaneous?) It could be studied very profitably by anyone who, finishing his undergraduate work, wanted a bird's-eye view of what he had learned.

Professor Phelps Brown's *A Course in Applied Economics* is, as the title suggests, in some ways at the opposite pole. It has not been written to set out analytical tools; instead its function is to show how they can be used. The reader is presumed to have studied theory and he is in this book brought up against "real" problems and shown how analysis mixed with judgment can provide solutions. The problems with which it deals are wisely chosen so that most aspects of the functioning of an economy are considered. The working of the pricing mechanism is carefully examined not in the abstract but by dealing with such problems as the formulation of policy for monopoly, and the pricing policy to be followed by nationalized industries. This whole treatment is unusually clear and yet brings out what economists would like their students to learn—that the answers are not likely to be found in simple slogans. In addition, problems of income stabilization and international trade are considered. Here again the treatment is excellent. This book deserves a place somewhere in the curriculum for it paints a very clear picture of how economists work. It could be used successfully as a supplement to an intro-

ductory text which presents basic theory, though it would probably prove even more valuable at a subsequent stage. While it is concerned with the problems of the British economy, this should not, I believe, reduce its value in this country.

LORIE TARSHIS

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Economic History; National Economies; Economic Development

Enterprise and Secular Change—Readings in Economic History. Edited by FREDERIC C. LANE and JELLE C. RIEMERSMA. (Homewood, Ill.: Richard D. Irwin, for the American Economic Association and the Economic History Association. 1953. Pp. xi, 556.)

There are good reasons for feeling well disposed towards this volume of readings in economic history. Its appearance suggests that economic history is no less alive and worthy of consideration than price theory or the theory of international trade—he who comes last is not necessarily least; and a volume which is the result of collaboration between the American Economic Association and the Economic History Association must make a strong appeal to all those who value progress in both economics and economic history and who believe that contact between them can lead only to the enrichment of both.

Within the covers there lies—as was said about a sheep's head, although Professor Gay has it that it was a haggis—some "fine, confused feeding." The volume is divided into three sections: the first dealing with Business Units; the second with Money and Prices; and the third with Method. Each of these sections contains some excellent articles (or selections from published work): one remembers especially the brilliant contributions by Gay, Heckscher, Mitchell, Nef, Sombart, Spiethoff and J. H. Williams. The variety is very great with respect to period, location and subject matter; from the Italian Cities of the Renaissance to the Growth of the Large Corporation in America, from the monetary theories and policies of Gustavus Vasa to Ricardo and the Bullion Report. There is writing by scholars from six countries, dating from 1890 to 1949. Of course the selection will appear ideal to hardly any reader, perhaps to no reader; and it would be easy—too easy—to reel off a list of names which one might have expected to find included but does not. What strikes one first, and what matters far more, is the range and variety of the contents.

Thus Section I begins with a series of excerpts from Schmoller and ends with Cole's "Approach to the Study of Entrepreneurship"; Section II begins with Wesley Mitchell's stimulating "The Role of Money in Economic History" and ends with John H. Williams on "The Crisis of the Gold Standard." But as the reader reaches this point he begins to wonder what principles have dictated the choice of articles. Is the book really as orderly as the division into sections would make it appear? It would not be claimed, surely, that each of these articles in the first two sections is the best available on its subject, having regard to the state of knowledge and opinion in 1953; nor are all of them rare articles, difficult of access (although admittedly five

of the twenty-one essays in the first two sections are translated for the first time into English); nor could all of them be regarded as path-breaking contributions to economic history. There is, it is true, some sense of unity, especially in Section I which emphasizes the centuries-long importance of the man of business in the western world and illustrates, besides, the long process of building up and breaking down theories of "economic stages." But articles on so many themes, by so many different hands, coming from so many countries and originating in so many points of view must present rather a disorderly appearance, must leave the reader wondering what economic history is about and what its practitioners would be at—and this is true even of the reader who thought that he knew the answers to these questions before he opened the book.

It is, however, here that the editors, possibly foreseeing this troubled state of mind, cunningly insert their section on Method: one article each by Gay, Clapham, Heckscher, Spiethoff, Simiand and Bloch. Of these articles, three appear in an English translation for the first time. This section is rather like the last volume of *À la recherche du temps perdu:* it resolves, or at least partially resolves, a number of doubts and problems. It focuses attention on the two grand questions: What is the purpose of studying economic history? What (even more insistently one finds oneself asking this question, prompted by the whole idea of the book)—what is the relationship of economic history to economic theory?

Few economists or economic historians can be happy about present-day relationships between economic theory and economic history. These two aspects of what might be supposed a unified discipline too often seem extraordinarily dissimilar. In the work of Marshall (himself, as Schumpeter, reminds us, an economic historian of the first rank) theory and history went hand in hand; but in whose *Principles* since Marshall's does history find an integral place? There seem to be two reasons for this alienation of history from economics. First of all, the years between 1890 and 1940 or thereabouts saw economists increasingly concerned with the study of equilibrium positions; and economic equilibrium is not an historical concept. Secondly, economists have recently become increasingly concerned with prediction. Now in prediction only short time periods can as a rule be considered, because demand changes, technological changes and political or social changes have to be eliminated as uncertainties. It is not true that they are not certain because not man-controlled, but they are simply regarded as beyond the convenient limits of the system. Therefore it is in a sense true to say that if economics is to be a system capable of prediction it must be a short-run economics. (And of course it is open to anyone to suggest that attempts to construct a systematic view may lead to the advocacy of a systematic economy into which change enters only at a controlled rate. Whether this is either possible or desirable is, however, an altogether separate question.)

Fortunately, there has been a reversal of the first of these trends in the last ten or fifteen years. Economists are now increasingly interested in problems of change and uncertainty, and with respect to these the study of economic history should be of the greatest importance. (The problem of entrepreneurial

here we return to the problem implicitly posed by the volume before us; even when economic history is not mere "total immersion in a bath of appearances" it can still be anything from *Der Moderne Kapitalismus* through Heckscher's "Natural and Money Economy" to Williams' "The Crisis of the Gold Standard." Are all these styles of thinking equally valuable and equally suited to effecting a reconciliation with economic theory?

Enterprise and Secular Change seems to suggest that there are three kinds of economic history. There is economic history simply for the sake of knowledge—for Light, in Pigou's phrase, not for Heat (although the difficulty here is that all knowledge, as Collingwood emphasized, must be organized in some way, and it is not always clear in what way this kind of knowledge is being organized); there is economic *Gestalt* theory, for both Light and Heat; and there is economic-historical classification and generalization for, in the opinion of the present reviewer, neither Light nor Heat. Each of these types has its practitioners and supporters. (A particular regret about the choice of articles, this time too keen to be suppressed, is that the editors, while giving us Spiethoff's own analysis of economic *Gestalt* theory, did not also give us a specimen of it by abstracting some passage from *Krisen.*) The relationship of the first and last of these types of thinking with analytical economics is unlikely to be either close or constructive; hope (for those of us who do hope for these things) lies chiefly in economic *Gestalt* theory of some sort. And here, it would seem, the economic historian may re-form the theorist's picture by stressing the shifting motives, the varying underlying social forces, the factors influencing demand and supply in the long run, the extraordinary complexity of the "real" world (as in Nef's masterly analysis of capitalism in France and England between 1540 and 1640, where not a few of our modern "discoveries" or rediscoveries about the inflationary process are anticipated). Thus the study of economic history should help to make the assumptions from which theory begins as reasonable for each environment and as clearly stated as possible.

Whether it was the intention of the editors of this book to provoke thoughts such as these is not clear; they seem, to judge by the Preface, to have had rather too many aims for comfort, and one trembles to think what the effect of the book might easily be upon "young scholars starting upon their own investigations" (p.v.), for whom, it is suggested, the book is suitable. But there can be few established economic historians or economists whose economic view will not be widened by reading this volume and reflecting upon their own work in the light of the conclusions which it helps them to reach; for it stimulates and provokes as well as enlightens. It reveals a handsome part of the great spectrum of economic history; it should stimulate us to fresh enterprise of our own, undertaken with a sharpened sense of purpose.

One last word. May we hope that those responsible for *Enterprise and Secular Change* will think now of a second but slightly different volume, *A Survey of Contemporary Economic History* or—to paraphrase another and an older title—*Essays on Some Unsettled Questions of Economic History?*

A. J. YOUNGSON BROWN

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Winchester, The Gun that Won the West. By HAROLD F. WILLIAMSON. (Washington: Combat Forces Press. 1952. Pp. xvi, 454. $10.00.)

Students of American economic development can readily agree with the author's statement that "Understanding of this period of American history is still incomplete." Hitherto, the stress has been mainly on our abundant natural resources, the phenomenal development of technology, the rapid increase of population, laws and decisions of courts, and so forth. Such accounts are barren when it comes to an understanding of the dynamics of our development. The invisible, intangible operating forces have been neglected, including such factors as individual initiative, imagination, vision of the future, "drive," and willingness to take risks. In this volume, with reference to the Winchester enterprises, the author supplies the necessary elements. He presents not only the development of the arms industry, but the capacities and personalities of leaders in this business.

The account covers the period from about 1855, when Oliver Winchester the founder, became interested in firearms, to about 1932 when the Winchester organization became an important part of the Olin industries. For men who could see them, opportunities lay before the eyes of prospective producers of arms. For one thing, fabricators abroad did not understand the requirements of users in this country. What worked for small game hunting did not work for large wild animals, and when the purpose was to fight Indians a gun that discharged one bullet and had to take time out for reloading was not much protection against charging Red Men. Moreover, expert riflemen were punctilious in their choice of guns. With us firearms had to be adjusted to the individual requirements of the users.

The author indicates that a small domestic industry began to appear in America in late colonial times, helped along by immigrant artisans from Germany and Switzerland. The advent of Eli Whitney, the inventor of the system of interchangeable parts, contributed an advantage to workers in this country. Oliver Winchester was not a pioneer in this industry, but he helped to prepare the way for better methods of production and for new types of arms. Prior to his entrance into the arms business he was a merchant selling men's furnishings. The author described him as "a new type of entrepreneur in the fire-arm industry." His predecessors in this business were inventors and skilled mechanics. In our history a shift of objective was not unusual, as was the case with Eli Whitney who was destined for school teaching, but through a chance remark of a friend, was directed to the invention of the cotton gin. What Winchester lacked in mechanical ability was more than compensated by his ability as a salesman, his grasp of financial matters, and his choice of subordinates who could advise him on technical matters.

An important feature of this book is the manner in which the author discusses policy questions which beset the Winchester management. In a growing country business conditions were in continuous flux. An unending task confronted managers in adjusting to new conditions. With Winchester, various questions were always to the fore: How to meet competition, whether to stick to traditional lines of production or to branch into others, and in such

case what others should be added to sustain profitable levels in the whole undertaking. Also, there were employment policy questions such as whether to use a contract system among employees or the standard daily wage. Should the company manufacture hardware which had little or no connection with its main lines? How should goods be sold—by direct sale to retailers, through jobbers, or through a chain store system, as was once considered?

In the period shortly after the Civil War the company encountered a new class of problems. This was the era of the beginning of combinations, trusts, trade agreements and, of course, laws against these practices. The management had to decide what course to take. It did engage in some of these practices. Problems existed in other fields, as with government contracts, and with policies for developing domestic and foreign trade. As yet, modern advertising was still in the embryonic stage, but more or less crude methods existed to call attention to the virtues of a company's products. It maintained a group of field representatives such as salesmen, "missionaries," and shooters. The duty of "missionaries" was to distribute posters and hangers to display in shops and windows, along with envelopes and order blanks. The shooters played the dramatic rôle—they were the experts who demonstrated the virtues of Winchester guns. The prestige of the company was further increased by testimonials of well-known riflemen. Finally, towards the end of the company's career the critical question was how to keep the organization afloat in face of losses.

These are merely a sample of the many questions to which the owners had to find answers. In short, this book is much more than a narrative of the company's growth. In a measure, it is a useful case study on business management as applied to this organization. The book is supplied with an extensive bibliography, and illustrated throughout with types of guns and various accessories used by the company.

I. Lippincott

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Economic Development of the United States. By John R. Craf. (New York: McGraw-Hill. 1952. Pp. vi, 598. $5.00.)

This volume deals with the economic development of the United States, presumably at the level of the beginning college student. In a field as rich in "facts" as that of the historical growth of the highly complex American economic society, a textbook author assumes the task of identifying those elements of the story which, when related in coherent and meaningful fashion, will constitute not only a solid foundation for the student's understanding of the nature of economic change but also for a more abstract analysis of the whole (theory), and for more detailed examinations of the rôle of the major institutional components. The task requires a purposeful organization which supplies the criteria for selecting the data to be discussed, and which leads to and supports reasonably explicit conclusions. Detail enriches or confuses, depending upon the skill with which the relevance of individual facts to a larger whole is indicated.

In this volume there are few hints to the student as to what is significant, or why, and numerous occasions for mental indigestion. We are told that "The general theme of the book is that the United States began as an agricultural nation and remained within that category for more than two hundred and fifty years. . . . In time settlers were followed by organized governments, transportation agencies, merchants, bankers and farmers. These became the nucleus of a highly developed society. As urban centers arose and as the United States matured, the threads of industrialization brought major changes to the pattern of American economic life. Slowly at first, and then at an accelerated pace, transportation and industry became essential in the economic structure." What is said about the agricultural nature of American society suggests a possibly fruitful interpretative approach to the subject-matter. Unfortunately, one looks in vain for either outright statement or indirect suggestion which develops this point of view. If the rest of the quotation can be said to suggest a theme, nowhere in the volume is it developed as such.

Few professors have escaped the experience of being approached by one of their students with the question: "How much of the detail in the text will we be held responsible for?" Such questions are usually and justifiably shrugged off with a stock answer. The query may, however, also be a source of embarrassment since it may legitimately arise from the failure of the instructor, or the textbook employed to perform the essential teaching task of supplying the organization, and suggesting interpretations and value guide lines, which help the student in developing his own capacity to judge as to the significance of data. Without such a set of interpretative tools, students (and the instructor) are lost in a wilderness of assorted, unclassified, unappraised "facts." The instructor using this volume will have little assistance in helping his students find their way out of the dense forest into which they have been led.

CLARENCE H. DANHOF

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A Short History of the International Economy, 1850-1950. By WILLIAM ASHWORTH. (New York and London: Longmans, Green. 1952. Pp. 256. $3.25.)

A well-written textbook which does more than rehash conventional materials deserves more than perfunctory notice. Professor Ashworth, a lecturer in economic history at the London School, has compressed into 250 pages the substance of a course in the history of international economic relations since 1850. The work aims to meet the needs of university students, but the author hopes it will "be of some value to the general reader with a lively interest in the process of historical development and the nature of modern society." Both purposes have been well served.

International, Ashworth observes, means "common to many nations" as well as "between nations." Although he deals with international phenomena in both senses, the emphasis centers on the processes of change and growth common to two or more countries. Breaking away from "certain current

fashions in the writing of economic history," he eschews "detailed consecutive treatment of the internal economic history of particular countries."

The story begins in the mid-nineteenth century, when "there were clear signs of change in progress and greater change impending." This seems strained; for "signs of change in progress" must have been as readily observable in 1846, or 1861, as in 1850. Though it is difficult to establish landmarks in economic history, probably the beginning of England's half-century under free trade qualifies as a convenient point of departure. Certainly, it added significance to international intercourse.

But the expansion of trade and the migration of British capital were not the only channels through which an international economy emerged. Prior to 1914, the spread of mechanization, resulting in "a massive expansion of primary production," reached manufacturing, mining, transport, and even agriculture universally. "Yet, though mechanical techniques became dominant in the economic activity of the world as a whole, they did not spread to every occupation or to every place." In eastern Europe traditional methods of farming, "too often a euphemism for semi-starvation," persisted; and colonial governments in the Far East restrained the development of industries which competed with imports from the home country. We lack extensive cross-sectional data, or long time-series, for more than a limited number of countries; but Ashworth presents a trenchant verbal analysis of the uneven flow of technology and machinery into the national economies of the East and the West.

More or less common experiences with the factory system, scientific management, business organization, and concentration accompanied the mechanization of production. While there were "numerous exceptions to the increase of business concentration," they were "too few to diminish the significance of the general trend." The labor movement, too, took on many international characteristics; although, "when tested by the First World War, patriotism proved far stronger than industrial solidarity."

Looking at "Government and Economic Life," Ashworth finds that no European country ever "came so near to laissez-faire as Britain"; but American philosophy, except for the high tariff, "carried laissez-faire further than it ever went anywhere else." Nevertheless, government regulation, economic planning, and public ownership widened their beachheads in every national economy. The differences were differences of timing, methods of control, and areas of intervention.

The "emergence of an international economy" resulted from the diffusion of technology and tools and the mass migration of people across national boundaries. Surely, there were earlier signs of its emergence—even in the sixteenth century—but the increasing interdependence of nations sharpened the contrasts between the nineteenth and earlier centuries. "Hardly any part of the world was permitted to remain economically self-contained, and the course of economic activity in any region tended in consequence to become more dependent on events and decisions in other places."

The outbreak of war showed "just how delicately balanced was the international economic system"; and the developments of the ensuing thirty-five

years repeatedly halted the prewar tendencies for the international economy to expand. Fresh attempts to enlarge the area of international division of labor often ended with agreements to curtail production, limit migration, and insulate national economies from the international. In contrast with the generally beneficent changes underway at the middle of the nineteenth century, the "signs of change in progress" in 1950 seemed to portend the continued disruption, contraction, and fragmentation of the international economic order.

This sane and carefully constructed account of a century of economic development yields little by way of conclusion or recommendation for reform. Ashworth has fulfilled his promise to show how "the bright promise bestowed by a century of material achievement was clouded by doubts whether the achievement might not be turned to base uses or utterly destroyed." The evidence strengthens the conviction that "the creation of an international economy" remains, as it was in prewar years, "the necessary accompaniment of the rapid development of the world's wealth, a process . . . almost universally regarded as beneficial." But when merely economic remedies for economic problems become unpalatable or seem impractical to those wielding political power, the counsels of an economic historian lose their charm.

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Soviet Economic Institutions—The Social Structure of Production Units. By ALEXANDER VUCINICH. (Stanford: Stanford University Press. 1952. Pp. x, 150. $1.75.)

Two aspects of the social organization of production units—power relations and group differentiation—are the main foci of investigation in this little book. In the study of power, defined as decision-making, the book examines the rôles of various groups viewed first in terms of their functions (managerial, control and social mobilization) and secondly in terms of their organizational form (government, party, trade union, "voluntary" organizations.) The study of group differentiation deals primarily with social stratification and mobility. Both problems are investigated successively in each of the five production units: the factory, collective farm, state farm, machine and tractor station and industrial cooperative.

Each production unit is treated separately, and the author leaves to the reader the task of generalizing from the material presented in each case. This, coupled with the numerous qualifications which are inevitable and commendable in the study of institutions so complex and so full of contradictions, makes it difficult to pick out the main theses. The following two points, however, are among the most prominent: (a) Power is lodged formally in the manager of the factory and the general meeting of the collective farm, but the incursions made upon this power by government and party organizations have diluted it to the extent that the manager is reduced to a mere "bureaucrat serving as a direct link between an economic unit and the government bodies," and " 'kolkhoz democracy' . . has shrunk to insignificance before the continually expanding network of channels devised to subordinate the

countryside to an indisputable authority of central government and Party quarters." (b) Within production units planned increase of social stratification has resulted in the "consolidation of the intelligentsia as a well-delineated status group," greater status differentiation among workers and peasants, and reduced mobility within and between status groups. There is nothing new in these conclusions, but it is in the qualifications and amplifications that the author makes some interesting contributions; for example, the "informal organization" by means of which factory management reacts to government and party incursions upon its power.

The author is severely handicapped by lack of space. Fifty-one pages are devoted to the factory, 42 to the collective farm, and 39 to the other three organizations. A substantial amount of this space is devoted to a highly condensed presentation of historical and descriptive background information, which leaves little room for a full development of the main arguments. Consequently, the implications of some of the more interesting observations are not explored. For example, a remuneration system in which the income of the more productive collective farmers is earned at the expense of the income of the less productive ones is suggestive of many intragroup tensions which are not explored even in theory; or a further pursuit of the theme of informal organization might have led to some fruitful inferences about the goal orientations of management. A second effect of the shortage of space is the absence of documentation and illustration of many interesting ideas, such as the statement that the glavk tacitly cooperates with the factory in many of its illegal actions, or that the class or group identification of a Soviet citizen is frequently determined in his youth. However, the documentation of factual statements is good and the author is careful with facts. The major exception, worth noting because it is important to the argument, is the labor draft status of women; contrary to the author's statement, women were included in the labor draft during the war and apparently still are.

The specific contribution of the book is that it culls out of the primary and secondary sources a number of sociologically relevant factors, classifies them in a convenient way, and brings them together in one place. Since the broad picture of the social relations in Soviet economic institutions had already been sketched out, the usefulness of the book would have been enhanced if the same space had been devoted to a more intensive study of fewer problems or fewer economic institutions.

JOSEPH S. BERLINER

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Formulation and Economic Appraisal of Development Projects. Book I: *Major Course Lectures;* Book II: *Lectures on Special Problems.* Lectures at the Asian Centre on Agricultural and Allied Projects sponsored by the government of Pakistan and UN Technical Assistance Administration. (Lahore: Supt. Govt. Printing. 1951. Pp. xiv, 473; vii, 399. $3.00; $2.50.)

In late 1950 the government of Pakistan, jointly with the Food and Agriculture Organization, the International Bank and the United Nations, in-

cluding the Economic Commission for Asia and the Far East, sponsored a ten-weeks conference and workshop on economic development problems. The lectures now appear in print in virtually the form in which they were delivered. Consequently they display both the merits and weaknesses of oral presentation reduced to print; a freshness and informality of approach combined with an occasional tendency to be long-winded or not entirely clear. All the same the lectures make good reading and the lecturers deserve high praise for the success with which they carried off what must have been a difficult assignment.

Book I contains the "six major courses" of lectures as follows: "Development Projects as Part of National Development Programmes," by Hans W. Singer (U.N.); "Appraising Costs and Benefits of Development Projects," by J. Thomsen Lund (International Bank); "Methods of Economic Forecasting," by Mordecai Ezekiel (FAO); "Organization and Administration," by Marion Clawson (U. S. Dept. of Interior); "Financial Aspects of Economic Development" by Egbert De Vries (International Bank); and "Preparing the Final Prospectus and Proposal for a Development Project," by Mordecai Ezekiel and Kemal Suleyman Vaner (U. N.). Book II contains lectures on "Special Problems of Economic Development." Some of these are indeed special problems, *e.g.*, "Planning the Development of Asian Fishing Industries," or "Farm Management Aspects of Agricultural Developmental Projects," but a few are of more general interest, *e.g.*, "Health Problems of Development Projects." Few economists interested in economic development problems will not be benefited by reading Book II. But many will probably feel with the reviewer that most of the presentations in Book II are too technical to be assessed by an economist.

Of the lectures in Book I the reviewer believes that those by Singer and De Vries will be found of greatest interest to readers of this *Review*. Though a full discussion of their presentations cannot be given here, a few of the points that they particularly stress should be mentioned. Unfortunately this review will have to omit comment on the other monographs.

Singer lays particular emphasis on what he calls the principle of accumulation and the principle of interrelation. "Economic Development is a cumulative process. . . . The secret of development planning is to set in motion forces of cumulation" (p. 2). As the subsequent discussion shows, Singer means by this that there is no linear cause and effect relation between, for example, poverty and capital formation, basic industries and development, agricultural development and industrial development, demand for basic services and supply of basic services, etc. If the reviewer understands him correctly, Singer here is emphasizing that development or improvement in any one sector fosters and makes easier development in other sectors: in development and growth everything depends on everything else in an organic not a mechanical manner. This is the principle of accumulation or, perhaps better, the cumulative principle.

The principle of interrelation in developmental programing concerns the necessity of understanding such complexities as the relation between social-

overhead service projects and directly productive projects, between public and private projects, between dispersed development and concentrated development, between capital-extensive and capital-intensive projects, between consumption gains and further investment, etc. Any successful planned program of development will have to take hard decisions on all these points, in Singer's view, and it is well to recognize them from the start while avoiding making irrevocable commitments wholly on the one side or the other whenever possible.

A good part of Singer's lectures consists in spelling out what these two closely related principles mean in concrete terms. It is a highly enlightening discussion.

De Vries' lectures to some extent cover ground already made familiar by other U. N. publications. The reviewer, however, found particularly fresh and revealing his remarks on "Savings and Investment in S.E. Asia," "Seasonal Factors in Agricultural Financing" and "Summary of Development Problems of S.E. Asia." In all three sections De Vries' intimate and at times deeply sociological knowledge of S.E. Asia comes through strongly to give the reader a fuller understanding of the problems than he is ever likely to get from neat equations and tidy syllogisms.

This review has had to omit much that the reviewer would have liked to commend and comment on in the lectures of the other contributors. He hopes, however, that he has conveyed his conviction that these two volumes are generally excellent, and that he profited from them with real pleasure.

NORMAN S. BUCHANAN

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Costa Rica: A Study in Economic Development. By STACY MAY, JUST FAALAND, ALBERT R. KOCH, HOWARD L. PARSONS and CLARENCE SENIOR. (New York: Twentieth Century Fund. Pp. xiv, 374. $3.00.)

The Twentieth Century Fund and the authors of this volume have put all students of problems of underdeveloped countries deeply in debt by this notable addition to a field of economic literature, so far more distinguished by good will and enthusiasm than by penetrating analysis.

The purpose of the book is twofold: first, to describe the economy of Costa Rica and its main development potentialities; and second, to discover the immediate contributions which technical assistance under Point Four—but presumably also technical assistance from international agencies—could make in accelerating economic development. Costa Rica was selected for this study presumably for two reasons: first, being a very small country, the major development priorities stand out more clearly and the number of important projects is more limited; and second, in a number of respects, Costa Rica presents rather more favorable opportunities for development and technical assistance than other underdeveloped countries.

The arrangement of the book is straightforward. The first two chapters (by Stacy May of the International Basic Economy Corporation) describe Point Four and the Costa Rican economy generally, and in relation to each other. Two chapters (by H. L. Parsons on loan from the U.S. Department of

Agriculture) deal with the agricultural sector. Three chapters (by Stacy May) deal with industries, utilities and commerce. Health and welfare are considered (by Clarence Senior of the Bureau of Applied Social Research of Columbia University). Foreign trade and exchange problems are discussed (by Just Faaland on loan from OEEC). The general analysis of the Costa Rican economy by sectors is concluded by two chapters on finance (by A. R. Koch on loan from the Federal Reserve Board). A concluding chapter draws together the results of the second analysis and presents conclusions and recommendations.

Contrary to many group reports of this kind, the report forms a consistent whole, and the staff of the Twentieth Century Fund, as well as the authors, are greatly to be commended for welding the individual contributions together. The reader of this volume has all the time the feeling that he is consistently, gently but firmly, directed towards the final conclusions. This ease of reading is assisted by the fact that the small size of the country makes a transition from general principles to specific projects rather easier than it is in larger countries. Assisted by the miniature scale of the problem, the analysis strikes a happy medium between a skeleton model and an economic almanac—that Scylla and Charybdis of reports of missions to underdeveloped countries.

One inevitable drawback of the book is that it was written under the immediate impression of the outbreak of hostilities in Korea. As a result, the authors seem much more concerned about the possibility of supply difficulties for Costa Rica than present hindsight would indicate.

Subject to this general acknowledgement of the high standard of the book, the following major criticisms may be made:

1. The study operates with a national income estimate of $180 per capita. This estimate is considerably in excess of the United Nations estimate ($125 per capita for 1949).[1] The difference between the two estimates may be attributed to the fact that the Twentieth Century Fund study has used official exchange rates. If the free market exchange rate had been used, a figure very close to the UN estimate would have been obtained. One wonders to what extent the optimism of this study on development prospects is related to what this reviewer believes to be an overestimate of the national income.

2. The study seems based throughout on the view that foreign assistance requirements are determined by the direct import requirements for equipment and material for development projects. This reviewer believes that this is a fallacy and that there is no necessary logical connection between the two.

3. The proposal to reduce food prices—*e.g.*, sugar prices—in order to release purchasing power for other products and create domestic markets, neglects the possibility that in the special conditions of an underdeveloped country the income elasticity of demand for food may be very high.

4. The stay of the members of the group in Costa Rica was very short (only six weeks for the group as a whole), and it is notable that frequently even on elementary and important matters, reliance is placed on random

[1] *National Income and Per Capita Incomes in Seventy Countries, 1949*. Statistical Office of the United Nations, October 1950.

interviews, the ideas of farmers, guesses, etc. (on page 130, even on fishermen's tales!). While fully recognizing the lack of information in underdeveloped countries, perhaps with a longer stay the group might have been able to undertake studies of its own on some of the problems involved.

5. From data given on page 114, it would appear that some $500,000 or so a year in foreign exchange is lost to the country through the smuggling out of gold. In a country of 800,000 people, this would seem a rather big problem and it is surprising that no reference and no recommendation is made to the possibility of utilizing this potential source of finance for economic development.

6. The report seems to operate too much with comparisons with the United States and ratios derived from U.S. data. A glaring example of this is to be found on page 134, where it is concluded that in Costa Rica "there seems to be even more opportunity in agriculture than in industry for productive improvement." This conclusion is derived from the fact that the ratio of per capita output in manufacturing to that of agriculture in Costa Rica is as high as 3:1, while in the United States it is only a little more than 2:1. This seems a very slender foundation on which to base such an important conclusion.

7. In its proposal to abolish "inefficient" small-scale retailing, the report seems to fail to take account of the fact that retailing is often an outlet for semi-unemployed producers and artisans. The report states on page 186: "Since many of the small retail establishments are at the same time producers of handicraft products, the growth of larger retail units might facilitate a larger scale of manufacturing, with its possible economies." To the reviewer, the link of retail trade and handicrafts seems to be a reason to be careful about increasing the scale of the unit in trade, rather than otherwise. It seems just as likely that handicraft production may be destroyed without being replaced by larger-scale manufacturing.

8. The report concludes from the data on changes in money supply 1940-49 that some savings must have taken place. This conclusion, however, seems only reached by neglecting the increase of population during the decade. On a per capita basis, there would appear to have been no increase in real money supply at all.

9. The report does not entirely escape the fallacy of scale. Thus, it is stated (p. 267) that "Costa Rica has up to now obtained only a small volume of financial aid." When the data are expressed on a per capita basis, however, it would appear that Costa Rica has received very appreciable financial aid from abroad.

10. The chapter on "Banking, Finance and Foreign Exchange" appears to be written in much more general and theoretical terms than the rest of the report, which goes directly to actual Costa Rican problems. This reviewer would moreover question the theory which permeates this chapter and is also embodied in the conclusions, that foreign investment may contribute to inflation. This seems a confusion of thought. A given degree of investment will be less inflationary the more it is financed from abroad. It is only when invest-

ment from abroad raises total investment by more than the influx of foreign capital that foreign investment can be said to be inflationary, and then only in comparison with the lower volume of investment which would have obtained in the absence of foreign investment.

11. The total cost and expected benefits of the projects suggested in the conclusions and recommendations are not worked out. In the absence of such figures, it is impossible to form an opinion whether the program suggested is well related to the resources likely to be available for economic development.

12. The report also raises some interesting problems of "welfare economics." On the one hand, the idyllic nature and charm of life on the Central Plateau of Costa Rica, with its eternal spring, are described; on the other hand, it is suggested that production should be shifted to other regions, particularly the Atlantic coastal area abandoned by the United Fruit Company because of the spread of the Panama disease. This seems to amount to a recommendation to sacrifice some of the "non-pecuniary advantages" of life on the Central Plateau for an increase in output.

Since this review has made a number of criticisms, it may be well to repeat that this is one of the best publications on economic development problems which has yet appeared. To offset the above-mentioned criticisms, this reviewer could give an equally long or longer list of intriguing points or of interesting analysis.

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Statistics and Econometrics

Econometrics. By J. TINBERGEN. Translated from the Dutch by H. RIJKEN VAN OLST. (New York: Blakiston. 1951. Pp. xxi, 258. $4.50.)

Econometrics is an important method of economic research. Yet, because many economists have not had adequate training in econometrics they have not been competent to judge its results. This is partly attributable to the absence of a competent introduction to the basic elements of econometrics. Tinbergen's book is designed to fill this need as well as to acquaint the economist with some of the more important results of econometric research. Needless to say, Tinbergen is eminently qualified to undertake this task.

The book is divided into three parts: the matematical formulation of problems, the statistical treatment of problems, and the contributions of econometric research. Discussion of the mathematical formulation is centered upon the conception of a rigorous analytical model for a given economic problem. Economic theory is presented as a set of relations describing the logical structure of the economic mechanism. The main points of this section are Tinbergen's discussion of the function of mathematical economics, the

[2] The author is a member of the United Nations Secretariat, but the views expressed in this review are his private opinions and do not necessarily reflect the views of the United Nations Organization.

formalization of economic relationships, the nature and form of supply functions, some problems of macro-theory, and the stability of equilibrium. To this reviewer this section does not measure up to standards of clarity, conciseness and systematic coverage of argument we have come to expect from Tinbergen. For example, the description of the function of mathematical economics (p. 13) is insufficient for the reader interested in the power of this tool. And in the discussion of simple aggregation in macro-economic investigations (pp. 34-35) the dimension and meaning of the commodity in the macro-function derived from the micro-demand functions are not clear. However, it should be noted that the same section contains a series of valuable observations. Among them we find (pp. 15-16) Tinbergen's discussion of the relationship between statics and dynamics, in which he emphasizes the relative obscurity of static models. He points out that a sufficient specification of economic mechanisms requires some description of dynamic properties and that often the logical character of the relations in a static model are not clear unless the dynamic background of the theory has been specified. He notes that relevant differences between economc theories may be obscured by a strict equilibrium analysis.

Tinbergen's discussion about supply functions is highly suggestive. He distinguishes between two basic types of supply functions: quantity-setting and price-setting functions which reflect important differences in institutional arrangements. Two different logical interpretations can be attached to these two types of supply functions. They may be considered as two different explicit solutions of the same implicit supply function. Or we may consider the quantity-setting function as a definition of the boundary of the attainable set of values of the variables and the price-setting function as a description of the quantity-price behavior within the attainable set, determined by a given institutional context. In addition he indicates that supply-analysis should take account of the differences presented by an order-reaction and an inventory-reaction case. This last suggestion seems particularly relevant for macro-theory.

In his discussion of statistical problems Tinbergen has restricted himself to a short general description of a few basic elements. A short description of time series, their decomposition by various methods, and of simple and multiple correlation dominates this section. This part may be essentially conceived of as a reference list of statistical concepts basic for the econometric approach. Some of the newer developments are included, *e.g.*, the simultaneous equation approach. Nothing is mentioned about the important identification problem.

The most interesting part of the book is in the chapters on results and policy evaluations. Tinbergen's summary of results presents useful references to econometric studies on demand functions, cost functions, production-supply functions and various types of market elasticities. It also includes discussion of a relatively complex international trade model, applied to the situation in the Netherlands in recent years. The reader will find a careful study of this section highly suggestive and most rewarding.

The model is based on three behavior functions: (i) demand function for

the national product by the home market; (ii) demand function for the national product by the world market; and (iii) supply function of the national product in the form of a price-setting function. Here Tinbergen has once again demonstrated his renowned ability to construct a manageable model. He clearly reveals the devices needed to assure manageability of a model whose structure is more complex than most international balance of payments theories. These devices include linearizing the relations by selecting increments relative to a base period as endogenous variables, and choosing a suitable scale for some of the price and product variables. These steps are essential to scientific analysis. With the help of methods of statistical inference Tinbergen derives estimates as to the quantitative structure of his model. Such estimates are necessarily subject to some degree of uncertainty. This uncertainty would be reflected in any conclusions drawn from and policy evaluations based on the estimated quantitative structure. To limit this uncertainty Tinbergen considered five quantitative structures differing from his best estimate but still all of them lying within some feasible range. One of the interesting results is his estimate for the price-elasticity of exports and imports, an estimate which has been derived from an analytical framework larger than that usually encountered in such studies. In all six cases their sum is never below 2.3. From the model Tinbergen extracted some relevant information for an evaluation of the balance-of-payments problems. He found that an isolated price or wage policy is a highly inefficient instrument for achieving an equilibrium in international payments. Devaluation fares no better as an isolated instrument. His results indicate that the combination of devaluation and deflationary fiscal policy would be efficient and that the order of magnitudes of the required policy would be perfectly realistic. May the disciples of Balogh be converted!

Some quibbles and questions concerning this last part do not detract from its over-all excellence. Nonetheless, the reviewer wishes to express himself strongly on the character of Tinbergen's exposition. The book is designed for the general economist—not for fellow econometricians—but the general economist may well experience some difficulties in following the argument beginning on page 165. Tinbergen leaps over some of the steps he employed to combine relations. Such gaps and leaps will frustrate the general economist trying to follow the argument. A more explicit discussion would have been preferable on pedagogical grounds. Concerning the nature of the relations certain questions come to mind. Should the average propensity to import be treated as a kind of technical coefficient? Is there no evidence that this quantity is an endogenous variable, dependent on price and cost structure even for smaller countries? Does there not exist some evidence to the effect that the supply of products for exports depends (partially) on the level of home demand for the national product? Casual experience in the postwar period suggests this last hypothesis.

One of the last sections in the book contains an excellent discussion on the limitations of verbal treatment of problems in economic analysis. Tinbergen's comment on this point may be usefully considered by economists. The book as a whole enables the interested reader to obtain a useful conception of the

general nature of econometric research. But it seems doubtful whether he will derive any workable knowledge of econometric research methods which he did not have before. Such a textbook on econometrics has still to be written.

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Economic Systems; Planning and Reform; Cooperation

The Dilemma of Democratic Socialism: Eduard Bernstein's Challenge to Marx. By PETER GAY. (New York: Columbia University Press. 1952. Pp. xvii, 334. $4.50.)

This intellectual and political biography of Eduard Bernstein, the leader of German "revisionist" socialism, is a competent and useful work. Unlike much current American literature dealing with one or another aspect of the socialist movement, its purpose is to understand the subject under investigation, not merely to grind a fashionable ideological axe.

The book is divided into three parts. The first deals with Bernstein's conversion to socialism in the 1870's, his exile from Germany by Bismarck's antisocialist laws and his years in Zurich and London, and his defection from Marxism after Engels' death in 1895. The second part discusses in detail the "revisionist" doctrine which Bernstein expounded and defended in the years just before and after his return to Germany in 1901. The third part resumes the story of Bernstein's career and its relation to the fortunes of German Social Democracy from 1901 until his death six weeks before Hitler came to power. In addition to published sources, Gay makes good use of the Bernstein Archives located in the International Institute for Social History at Amsterdam; and in finding his way through the intricacies of Marxian theory and German history, he has evidently profited from the guidance of Professor Franz Neumann of Columbia, under whose direction the study was undertaken. The style is clear and straightforward.

The material which Gay has assembled and digested allows us for the first time to see Bernstein in proper perspective and to judge his achievement fairly. He was a Fabian long before he ever went to England and indeed long before there were any Fabians, and his conversion to Marxism seems to have been more a matter of party loyalty and devotion to Engels than of genuine conviction. Seen in this light, his abandonment of Marxism after Engels' death seems to be not only natural but inevitable: he was merely giving expression to his own earlier and more deeply held convictions. That this took the form of "revising" rather than repudiating Marx was also inevitable under the circumstances: subjectively, Bernstein wanted to remain faithful to Engels, but much more important (this point seems to have escaped Gay), it was impossible to get anywhere in the German socialist movement in the late '90s unless one professed to be some sort of a Marxist. Bernstein was very far from being the *founder* of revisionism; it was already a strong tendency in the movement before he began to write about it, and by the early years of

the new century most of the German Social Democratic Party were practical if not theoretical revisionists. Bernstein's rôle was merely to formulate what a lot of people thought or felt, and his fame and popularity were in large part due to the fact that he provided the kind of theoretical justification and respectability they needed (also of course to the resounding applause of the bourgeois press—again a point overlooked by Gay). He was neither an original nor a powerful thinker, and his supporters and followers were an undistinguished and heterogeneous lot who created no lasting school of thought. After the Great Debate over revisionism had subsided (before 1910), Bernstein had nothing new to offer—his opposition to the war was a highly personal attitude, largely influenced by his Anglophilia—and during the Weimar period he had little influence and led an increasingly isolated existence.

The picture of Bernstein which emerges from Gay's careful review of his career is thus one of almost total failure. His theories enjoyed a momentary fame, not because of any particular merit but because of the special historical context in which they were first published. The practical politicians and trade union bosses who eventually came into control of the German socialist movement agreed with Bernstein—to the extent that they bothered to think about theoretical questions at all—but had no use for him in their inner counsels. And the content of Bernstein's message—the gradual conversion of the German middle classes to socialism, permitting a peaceful and legal transition to the new society—has been brutally belied by the whole course of German history during the twentieth century.

Gay, whose fondness for Bernstein is both obvious and understandable, tries hard to reach a more favorable verdict on Bernstein's career (especially in the last chapter), but the result only emphasizes the hopelessness of the effort. The truth is that, apart from (doubtless justified) encomiums to Bernstein's moral character, Gay is forced to recognize explicitly the meagerness of his achievement. "It must be said . . . that his doctrine made only a negligible *theoretical* contribution to Socialist thought" (p. 296). "The contribution of Revisionism to Socialist tactics was equally problematic" (p 297). ". . . the reformists gained power in the party quite independently of the Revisionist theorists" (p. 299). "It is certainly true that Bernstein was unfortunate in his supporters—not one of them understood his democratic Socialism sufficiently to develop it further" (p. 300).

It would, of course, be quite wrong to conclude that it was not worth while to write Bernstein's biography. On the contrary, he is a famous and controversial character who badly needs to be seen in proper proportions and perspective. It is Gay's merit that, despite his partiality for his subject, he gives us what we need for the purpose. At the same time, however, it must be said that he could have added greatly to the significance of his book if he had frankly faced the fact of Bernstein's failure and had inquired seriously into its implications. As it is, the book is good as an intellectual and political biography of Bernstein, but it never comes to grips with the crucially important problems implicit in its title.

Gay's handling of the economic theories in dispute between Marxists and

revisionists is on the whole adequate but uninspired. (This may sound like damning with faint praise; but in the present intellectual atmosphere in this country, it should be taken as—and is intended as—a compliment.) There is, however, one important exception: Gay's treatment of the capitalist breakdown issue seems to me to be deficient both as regards its meaning and its wider implications. At the very center of Bernstein's attack on Marxism is the alleged theory of capitalist breakdown which Bernstein simply takes for granted as being an assential part of Marx's doctrine. And yet the truth is that Marx had no such theory, as Gay himself in effect admits when he says that "Marx never presented a coherent picture of just how capitalism would come to an end" (p. 177). In spite of this implicit admission, Gay argues as though Bernstein had been quite justified in attributing a breakdown theory to Marx. Gay's reasoning seems to be that since Marx (undeniably) believed in the existence of *tendencies* to capitalist breakdown, it follows that he must be assumed to have believed in the eventual inevitability of capitalist breakdown. This is on a par with the well-known criticism of orthodox economists which maintains that because they assert the existence of tendencies to long-run equilibrium, they must also believe in the reality of long-run equilibrium. It is a time-honored method of criticism, and it leads to easy verbal victories —but also to quite irrelevant conclusions. Gay's failure to see this vitiates his whole discussion of the breakdown controversy (pp. 176-90). This is too bad, since the problems involved in this controversy are among the most difficult and important in the whole field of political economy and in a very real sense dominated the debates between the revisionists and the orthodox Marxists.

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Comparative Economic Systems. By THEO SURÁNYI-UNGER. (New York: McGraw-Hill. 1952. Pp. x, 628. $5.50.)

This book is ambitious in scope, overwhelming in erudition, and challenging in thesis. The first hundred pages, constituting Part One, state the theme: the categories conventionally used in classifying contemporary economic systems are inaccurate and provoke discord among nations by their mutual exclusiveness. Such supposedly extreme systems as those represented today by the United States and the Soviet Union are in fact constantly in flux and are both tending towards some mean position between them, such as that occupied by Great Britain. In short, according to Professor Surányi-Unger, the outmoded static concept of rigid differences in kind must give way to the more fluid concept of ever-changing differences of degree.

Part Two (about twice the length of Part One) analyzes the *social* elements which today at once differentiate and fail to differentiate the "American sphere" from the "Soviet sphere." This section relies heavily on history, philosophy, anthropology, and allied disciplines. The point stressed here as elsewhere is the fundamental and growing *rapprochement* between "West" and (Soviet) "East."

The third part, and second half, of the volume discusses the *economic*

element in contemporary systems. In so far as systems may be identified by their economic characteristics, the chief criterion is the relative amounts of collectivization and private enterprise. The reader will find in these latter chapters most of the material customary in textbooks in this field, but only by way of illustrating the author's theses regarding the distinctions, and lack thereof, between the Soviet and non-Soviet worlds. The theme of dynamic transmutation of economic systems is stressed for a third time. The author repeats here the argument of his earlier volume,[1] including his questionable idea that "collectivization" may be treated by the indifference curve technique as a "good" opposed to "reprivatization." Indeed, this volume as a whole may be viewed as a restatement and expansion of the earlier volume, recapitulating it verbatim in places. (*Cf.* p. 293 of the new with p. 15 of the earlier volume.)

The book suffers from confusion as to aim. No work can successfully be simultaneously an original treatise and a beginner's guidebook. To mention just one difficulty in this connection, the language of this book is not infrequently too esoteric for normal readability and is certainly beyond the college student. Not only should a textbook not double as a treatise, but no scholarly publication should be a tract, and this book at times harangues too much.

The most constructive aspect of the book is its experiment in polysynthesis. There can be no doubt that a "general" economics which can deal with new twentieth-century forms of economy as well as with traditional laissez-faire capitalism must combine the mathematical formalism of modern analytical theory with knowledge from the general corpus of social science.

Unfortunately, the author's vast coverage is at the cost of some error. For example, he misconceives the nature of both Platonic and medieval philosophy (p. 134), misappraises the kolkhozi (pp. 30 and 394-96), and oversimplifies and distorts Marx (p. 136). His gravest deficiency is that he founds his system upon an extreme nominalism which he cannot sustain and which leads him into profound pitfalls. His denial of the existence of distinctive species or categories implies the impossibility of man's power to generalize—a power upon which all human knowledge rests. It also belies our common-sense realization that fascism, say, is in truth a distinctive system. Its practical consequences are most dangerous, for it counsels a do-nothing policy in the face of evil on the grounds that the evil (1) is not there (differences do not exist) and (2) will go away (differences of degree dynamically disappear). Moreover, despite his denial, he finds himself forced to erect classificatory systems of his own based on questionable distinctions, such as materialistic and nonmaterialistic, primary and secondary, distributive and equalitarian economies.

A system, whatever its merits, is not likely to convince if it even merely superficially seems to be obscure and contradictory.

Allen M. Sievers

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[1] *Private Enterprise and Governmental Planning: An Integration* (New York, 1950), reviewed by Carl Landauer, *Am. Econ. Rev.*, Sept. 1951, XLI, 696-98 and by A. G. Papandreou, *Econometrica*, Oct. 1952, XX, 698-99.

National Income and Social Accounting

Veränderungen der Einkommensverteilung in England, 1938-1948. By ERWIN GERBER. (Bern: Rösch, Vogt und Co. 1952. Pp. vii, 152. 16 sw. fr.)

A study from abroad of economic change in a country is frequently of interest because distance results in better perspective and detachment from partisan issues or because a comparison with developments in the author's own country enriches our knowledge of comparative economics. The present study has none of these merits.

Dr. Gerber's study on changes in the distribution of personal income in the United Kingdom falls into three parts. In the first chapter, changes between 1938 and 1948 are described and particular attention is paid to factors which have caused an increase in the share of wage income in the total. The second chapter deals with the impact of taxation on the size distribution of disposable income. In the third chapter, changes in real personal income are discussed. The main findings on the extent of the levelling process and on the effects of taxation and of differences in the change of the cost of living, summarized in a concluding chapter, are broadly in agreement with those reached by British students.[1]

The study is organized around some 50 tables drawn from a variety of British publications ranging from the official White Papers on National Income to the Conservative Campaign Guide. The author's use of source material is, however, less critical and imaginative than in the recent journal articles by Barna, Brown, Reddaway, Rhodes, Sears and Wallis (to which Gerber, however, makes no reference).

Gerber's study contains no material that would not be known to students of the British economy, although it will provide the continental reader with a wealth of information on such subjects as the United Kingdom income tax structure (including sample computations of tax returns), the computation of Laspeyre's index or the Organization for European Economic Co-operation recommendations for an investment program for the United Kingdom. A good part of the text consists, indeed, of brief summaries of articles which have appeared in recent years in the London *Economist*, including the well-known series on the Age of Inflation, and of various documents, such as the Labour government's "Statement on Personal Incomes, Costs and Prices" of February 1948.

The author's endeavor to give the study a logical structure by subdividing a 150-page monograph into fifty sections with separate headings is defeated by his wrestling with definitions. Indeed, the struggle begins on page 1, where in a footnote he tries to clear up the confusion arising from the continental use of the terms Great Britain and England to denote the territory of the United Kingdom (but thereafter proceeding to use these three terms indiscriminately). This reviewer wonders whether the problems of exposition would not have been simplified if the author had avoided using such cumbersome definitions as the following one for taxes, at the beginning of Chapter 2,

[1] See, for instance, D. Sears' article in the October 1949 *Bulletin of the Oxford Institute of Statistics.*

taken from Amonn's textbook: "A compulsory payment levied by a government unit from private economic units belonging to it, by virtue of the fact of their belonging to this unit, 'belonging' being defined not in a political or territorial, but in an economic sense, namely as belonging to the economy of the Government unit."

In many cases when Gerber's exposition reaches a point where some broader and provocative analysis could have been attempted, he rules the problem to be "outside the scope of our study." Yet the study is overloaded with material only indirectly related to the subject and used to only a very limited extent in subsequent discussion. Thus, after a lengthy summary of the well-known article by Mary J. Bowman,[2] illustrated by charts in which the original American data are replaced by U.K. income distributions, the author remarks that the preceding pages should have simply shown the potentialities of graphical analysis.

GEORGE GARVY

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Business Fluctuations; Prices

The American Economy in 1960. By GERHARD COLM, assisted by MARILYN YOUNG. Planning pamph. no. 81. (Washington: National Planning Assoc. 1952. Pp. ix, 166. $2.00.)

The Sustaining Economic Forces Ahead. Materials prepared for the Joint Committee on the Economic Report by the Committee staff. (Washington: Supt. Docs. 1952. Pp. viii, 70.)

Markets after the Defense Expansion. A report prepared by the staff of the Office of Business Economics, Dept. of Commerce. (Washington: Supt. Docs. 1952. Pp. vi, 90. 55 c.)

These three pamphlets, or monographs, attempt to present a factual and analytical basis for judgment about future levels of economic activity. All are written for the purpose, which is more or less explicitly stated, of allaying the fears of a major recession or depression that have gained dominance among economic analysts. In the words of Colm, there is "some validity and a good deal of error" in such views (p. 69).

Attempts to counter public fears with official reassurances have, in the reviewer's opinion, little merit, because they carry the disturbing implication that they would never have been made if the situation were really secure. In contrast to the outpouring of such "reassuring" speeches and press releases from Washington since the Russian "peace offensive," these reports really present the kind of evidence that permits a rational appraisal of prospects.

All three deny that any specific forecast is intended. The objective is rather to present projections, based on stated assumptions, as guides to government and business in planning for prosperity without inflation in the years ahead. There is substantial unanimity that although the danger of a decline

[2] "A Graphical Analysis of Personal Income Distribution in the United States," this *Review*, September 1945.

exists, the evidence that it will be serious, or even occur at all, is not conclusive. To quote the Commerce Department, 1955 may be expected to "provide a serious test of strength of the economy." But, "we cannot conclude that a business recession will or will not occur, sometime, or any particular time, during the next few years" (p. 3).

The Sustaining Economic Forces Ahead was the earliest of the three in timing of analysis and in date of publication. Originally undertaken when the pessimism of early 1952 was at its height, it represents a rather straightforward attempt to refute prevalent arguments that a serious decline was in the offing. It deals with the entire period from 1952 to 1960 in terms of the investment and other goods that would be needed to maintain minimum living and production standards in a growing, healthy economy.

It may at times strain a little in making its point—for example, in relying on the projection of geometric trend lines—but even discounted for possible exaggeration, the estimates are large enough to call in question the more pessimistic predictions that are currently in circulation. The independence of thought and judgment underlying this work is illustrated by the adoption of population estimates in the higher part of the range of probabilities projected by the Census Bureau, with a challenge to the population "experts," that they "assume rather unrealistically that by 1955 the birth rate will have fallen to the depression low" (p. 12).

The American Economy in 1960 jumps the intervening years to analyze the possibilities of achieving and maintaining full employment after the defense build-up is complete and military spending drops back from a peak of $60 billion to a maintenance rate of $40 billion. The analysis is carried out in terms of a series of models, all of which assume an international situation much like the present and a gross national product of $425 billion in 1951 prices (based on armed forces of 3.5 million and a civilian labor force of 69 million with 4 per cent unemployed).

The method of constructing the models is described in some detail. Each assumes a different way of arriving at the $425 billion total—essentially by assuming that the deflationary gap left by the decline in military expenditures will be filled by compensating changes in one or another of the major sectors of the economy, as represented by consumer, business, international, and government accounts. One by one, all of these partial models are rejected, leading to an "adjusted" model in which each of the sectors makes a more moderate contribution to the projected level of activity.

Colm displays a mastery of the method based on long experience, having been associated with its development from the beginning. Nevertheless, his results illustrate again that model building can produce almost any desired result. A combination model that requires only limited contributions from various sectors is seemingly more realistic than one that requires an extreme contribution from one sector; but the combined result is dependent upon a conjuncture of adjustments that is not necessarily more probable than a single large adjustment. Perhaps the biggest question mark lies in the consumer account. The saving rate is assumed to drop from the recent 8 per cent of disposable income to 5.4 per cent—equivalent to that experienced in the

somewhat abnormal years 1948 and 1950. Colm's statement that this implies the "same situation—high positive saving, and heavy purchases of consumer durables, supported by an increasing level of outstanding consumer credit" (p. 55)—is not entirely reassuring.

Colm puts his models to the best use to illustrate the "policy adjustments" needed to promote high level stability. Among the policies recommended are low prices, low interest rates, low taxes, and borrowing to finance some government investments but none of its current operating expenses. In discussing these policy adjustments, many theoretical points are developed. With reference to the government budget, for example, it is pointed out that "a balanced cash budget on a high level might be inflationary while an attempt to balance the budget on a lower level may be deflationary" (p. 87). There is much of interest to the general economist in both the body and the appendixes of this report.

Markets After the Defense Expansion is specifically aimed at informing "the business community on factors affecting the level of civilian demand after the present defense program has reached its peak" (title page). The bulk of the pamphlet is devoted to a discussion of the current position of the major segments of the gross national product and prospective changes that might be expected in each between 1952 and 1955. At the end, it presents "a high-level market pattern" for 1955—a model, of the Colm variety, based on the assumption that the economy will continue to operate at a high rate—and offers some suggestions for applying this market pattern to the problems of the individual business concern.

It presents the material needed for making a short-term forecast without actually organizing it into an over-all forecast. The techniques used in analyzing the segments vary considerably. To illustrate, the chapter on "Business Intentions to Invest" begins by presenting the results of two surveys of the future capital outlays planned by business concerns; it immediately supplements these with analytical material taking account of historical trends and the magnitude of current investment in relation to capacity and profits; and it then goes on to discuss inventory fluctuations, the availability of financing, and the degree of market satisfaction for other forms of investment, such as farm, institutional, and residential construction. At various points, the resources of other organizations and agencies are drawn upon to round out the Department's own work. Altogether, it is the best analytical summary of factors in the business outlook published to date.

All three of these publications place considerable emphasis on the continuing growth of the economy as a factor limiting the extent and duration of cyclical declines. They also emphasize the extent to which such declines will be mitigated by the automatic stabilizers that have been built into the economy—mainly, flexible taxes, unemployment compensation, old age pensions, farm price supports, and insurance of bank deposits. Recognizing that the quantitative effects of these factors will be limited, however, they fall back on the Employment Act of 1946 as an indication that vigorous action will be taken by the government if any decline should threaten serious unemployment.

The reader whose primary interest is practical and short-run will find

Markets After the Defense Expansion well worth the reading. Those whose interest leans more to theoretical considerations and the longer-run will find *The American Economy in 1960* rewarding. These two contain most, though not all, that is of lasting value in *The Sustaining Economic Forces Ahead.* Together, they disclose the strengths and weaknesses of an economy facing a transition at the peak of an armaments boom and the problems involved in keeping it prosperous in the future.

V LEWIS BASSIE

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Economic Stabilization: Objectives, Rules, and Mechanisms. By WALTER P. EGLE. (Princeton: Princeton Univ. Press, for the Univ. of Cincinnati. 1952. Pp. xii, 264.)

Taking his cue from the late Henry Simons, Professor Egle has set himself the task of impressing all those interested in stabilization policy with the need for binding goals—for firm government commitment to clearly defined floors and ceilings of aggregate economic activity. However, Egle would aim primarily at the stabilization of employment and income and only secondarily, prices. Emphatically rejecting as inadequate reliance on automatic stabilizers, he has also placed the emphasis on the need for discretionary, countercyclical variation in federal expenditures and tax *rates.* If we add his expectation (like that of Simons) that his scheme will ultimately become self-enforcing, we have in a nutshell Egle's central theme.

To the professional economist, the book under review is likely to appear as a restatement of familiar ideas. Such a work is not without merit, provided it offers a thorough examination and scholarly appraisal of issues and alternative proposals. Unfortunately, these traits are lacking in the present book. Egle has been content to raise a lot of old (though still important) questions, but after a few cursory remarks, drop them again without having shed much new light. The book rather resembles a (good) manual for policy-makers and administrators. In fact, it should be made required reading for these groups, as well as for all congressmen and members of the business community at all interested in stabilization problems.

The first two parts of the book are largely an examination of the adequacy of variously proposed built-in stabilizers. In the first part, Egle deals with what he calls "fixed schemes," which are really automatic-stabilizers proper (corporate and personal income taxes, underemployment compensation, etc.). The second part deals with what he calls "flexible schemes," *i.e.,* programs which permit discretionary action circumscribed by a set of legislative rules, as well as various kinds of "tripping" devices for effecting automatic changes in tax rates and expenditures. After brief discussion, the first group is rejected on the well-known grounds that built-in stabilizers can provide only retarding influences on income movements. Except for the "stable money" people, most readers will find little to dispute in this discussion, other than the elliptic nature of much of it, particularly the analytical portions.

There is more to quarrel with in Egle's rejection of the so-called "flexible"

stabilizers. He displays too strong a tendency to dismiss proposals out of hand. Thus in rejecting the method of heavy public works, he raises the old arguments about their lengthy planning, inception, and termination periods. No recognition is given to the important work of Benjamin Higgins,[1] who, after detailed empirical study of the problem, has indicated that a good deal of flexibility can, in fact, be incorporated into public works programs. Since public works programming offers such a potentially important rôle in compensatory fiscal policy, Egle should, if he disagrees with Higgins' ideas, have dealt with them in some detail in a book of this kind.

Automatically varying tax rates are summarily rejected on the vague grounds of "annoyance" to taxpayers, the administrative problems posed to government officials, and the possibility of confusion to businessmen brought about by varying tax schedules. However, as to this last difficulty, it would appear that Egle himself is confusing certainty with constancy of variables in decision functions. As long as rate changes occur in a predictable manner, known beforehand to businessmen (a condition implicit in such proposals), confusion from this source will be at a minimum. On this point alone, it might be argued that automatic variation in tax schedules is better than discretionary variation, since the former is at least predictable. At a more general level, it is to be observed that most of the problems posed by Egle in this connection would apply with equal force in a discretionary scheme of things. The major, and perhaps decisive, exception to this statement lies in the implicit assumption underlying the automatic program that there is something uniform about the way in which the strength of cyclical forces operates, not only from cycle to cycle, but among the different phases of each cycle.

However, as Egle notes, "the purpose of such rules is not to reduce the handling of such controls to sheer routine but to make certain that the control will be used to fight swings" (p. 86). Advocacy of this type of automatic program has stemmed largely from a recognition of the need to do away with the woeful lags inherent in the present legislative scheme of things, and at the same time, from a recognition of the wisdom of presenting such proposals in as palatable a manner as possible to a Congress jealous of its prerogatives in tax and appropriation matters. For one who gives so much attention to such "practical" considerations, Egle is surprisingly harsh on proposals of this type.

Part III, the core of this study, concerns itself with an analysis of the theory and application of the "method of binding targets." "The principal source of weakness in past stabilizing efforts has been the absence of clearly formulated (objectives) and powers on the part of authorities entrusted with cycle control" (p. 97). The means to achieve the end must be adequate, which means strong discretionary powers to vary budgetary outlays and tax rates to the required extent. "The ultimate purpose of the binding norm is to establish public confidence in future markets and job opportunities (in the hope that) producers and consumers will behave so as to simplify greatly the task of the stabilizing authorities" (p. 98).

"Objectives should be stated in terms of a binding floor and ceiling making

[1] *Public Investment and Full Employment* (Montreal, 1946).

for a liberal margin of fluctuations" (p. 97). A floor of 5 million unemployed is suggested to avoid the problem of differentiating voluntary from involuntary unemployed and to avert the possibility that too high an employment floor might give rise to wasteful "quasi-doles." Fears of the latter seem at odds with Egle's ideas of a carefully conceived program. And 5 million unemployed seems rather high in the present social context. Officials were decidedly fretful in 1949 when unemployment rose to some 3 million.

Problems of fixing a ceiling are rather formidable, too. Egle is inclined to think in terms of a *price* ceiling, because inflationary price movements are ordinarily ineffective in inducing expansion of output and employment. However, the degree of inflation should be specified. One could make a pretty fair argument that some inflation (say, about 2 per cent a year) is a good thing for investment outlays in a free-enterprise economy faced with possible saving-investment problems. If there is anything to the Kondratieff thesis of long waves of exhilaration and depression or stagnation, one might point to the long periods of differential price movements as offering some corroboration of this suggestion. Moreover, there are such problems as rising prices long before full employment is reached and the ever-ticklish possibility of converting upswings to downswings. Some inflation might well be tolerated to avoid the latter problem.

The principal thesis of the final part of the book is the need to back up strong monetary-fiscal tools with such direct controls as qualitative credit and even price and wage controls, as a means of coping with serious sectoral dislocations or maladjustments. Egle places particular stress on these controls during the "launching period" of his program, when the problems of rigidities and inflexibilities are likely to be particularly acute. To deal with the latter, strong action toward "competitive reform" is urged. While not wishing to dispute the merits of such reforms on other grounds, this reviewer feels that Egle handles the problem of the relationship of monopoly (or oligopoly) to business fluctuations much too glibly.

At the outset of this book there is a discussion of the relationships between the problems of stagnation and cyclical instability, which leaves much to be desired. In particular, Egle is too prone to dismiss the stagnation thesis without sufficient appraisal of its merits or weaknesses. Instead, there is a facile tendency to toss off the problem as a product of "monopolistic restrictions and undue concern with security." As a result, Egle finds "particularly aggravating" the various suggestions for stimulating private investment and lending activities, because such programs might generate unprecedented business fluctuations. This position, of course, begs the central question of his entire discussion, *viz.*, whether future secular growth of the U.S. economy will be characterized by underlying stagnation or inflationary tendencies. Correct emphasis in the area of fiscal and monetary policy requires some evaluation of long-run trends, a (thankless) task to which Egle should have addressed himself. After all, if a tendency toward chronic underemployment should, in fact, manifest itself, there is the possibility that his book would be quickly relegated to the History of Economic Thought.

D. HAMBERG

Readings in Business Cycles and National Income. By ALVIN H. HANSEN and RICHARD V. CLEMENCE, *editors.* (New York: W. W. Norton. 1953. Pp. xi, 588. $3.95.)

This collection of readings "is intended primarily for the use of undergraduate students" for the purpose of gaining "a firsthand acquaintance with at least some portion of the literature of their subject." The 37 selections are arranged in seven groups: Historical Episodes (4 selections); Business-Cycle Theories (11); Economic Dynamics (6); Econometrics (6); International and Interregional Aspects (3); Long Cycles (2); and Cycle Policy (5). The readings are reprinted in full, and the editors have prefaced each selection with brief comments to introduce the reader to the author and his work. The "Business Cycles" of the title is apposite in that the readings deal primarily with fluctuations, while the "National Income" portion of the title is accurate in the sense that most of the articles analyze cycles on the aggregative level. In addition, several of the articles in the Economic Dynamics and Cycle Policy sections are concerned in part with the conditions for steady growth of national income over time.

The collection will be of greatest value to those instructors who teach business cycles primarily as a course in cycle theory—or, more accurately, in cycle theories. Part Two, on business cycle theories, has a strong history-of-doctrine flavor: the authors of the selections are J. S. Mill, Jevons, Alfred and M. P. Marshall, Pigou, Spiethoff, Cassel, Aftalion, Hawtrey, Mitchell, Robertson, and Kahn. The frontiers of contemporary thought are represented by the readings in Parts Three and Four, on economic dynamics and econometrics. The selections in Part Three deal with the neo-Keynesian models of Harrod, Hicks, and Metzler. It is something of a surprise to discover that only one of the six selections in the econometrics group (Einarsen's summary of his work on reinvestment cycles) is devoted to statistical work with a theoretical model. Tinbergen's "Critical Remarks on Some Business Cycle Theories" reports some of the results of his investigations, but does not reproduce his models. A third article in the group, Kaldor's "A Model of the Trade Cycle," really belongs in Part Three. The remaining articles in Part Four are concerned with methodological problems, and include the Keynes-Tinbergen controversy on statistical business cycle research.

It is axiomatic that the editors of a collection of this nature cannot please everyone. In the present instance the editors have done well what they set out to do. Given their framework, the quality of the selections is high, and a reasonable balance of differing points of view is maintained. In this context, the reviewer really missed only two readings. Keynes' "Notes on the Trade Cycle" from the *General Theory* might well have appeared in Part Two, and Schumpeter's 1935 article from *The Review of Economic Statistics* in Part Two or Three. (The latter, however, is reprinted in the American Economic Association's *Readings in Business Cycle Theory.*) On the other hand, it was a pleasure to discover that materials on international and interregional aspects of cycles and Garvy's excellent article on Kondratieff's theory of long cycles had been at last made easily available for student use.

The reviewer was somewhat disturbed by the comparative underrepresentation of the points of view of those scholars who believe that research in the field of business cycles should combine theoretical, statistical, and historical analysis. Thus Metzler's review of Burns and Mitchell's *Measuring Business Cycles,* which is included in the collection, provides a brief summary of "the National Bureau technique" of business cycle research together with a critique of the approach, but no defense of the approach appears in the volume, nor is there anywhere an example of the use of the method. The first deficiency could have been remedied by including, for example, Part V of Chapter I from Mitchell's 1927 *Business Cycles,* and the second, by reprinting Abramovitz' preliminary summary of his investigation of the rôle of inventories in business cycles, which appeared as National Bureau of Economic Research Occasional Paper 26. Again, although analyses of four historical episodes appear as Part One of the volume, no methodological discussion of the historical approach—such as that presented in Gordon's paper in the 1949 *Papers and Proceedings* of the American Economic Association—has been provided. As a final example, it may be noted that none of the several discussions of Harrod's and Hick's cycle models which appear in Part Three (with the possible exception of Wright's article) is unsympathetic to the few-variable, *a priori,* aggregative approach which they exemplify. The substitution or addition of A. F. Burns' "Hicks and the Real Cycle" (*Journal of Political Economy,* February 1952) would have improved the balance of this section. It is obvious that modifications of the type suggested in this paragraph would imply either a substantial increase in the length of the book or a sacrifice of readings—probably from Part Two—which the editors evidently felt were of greater importance for the purposes of undergraduate instruction. Nonetheless, the suggested changes would have increased the already substantial value of the book to those instructors who hold the opposing view.

Hansen appears in the volume only as joint-editor. It is unfortunate that editorial modesty has prevented the inclusion of some selection representative of his thought. His restraint is the more remarkable in that Simons' polemical review of *Fiscal Policy and Business Cycles* appears in the Cycle Policy section. The remaining readings on cycle policy include articles by Kaldor and Slichter, the committee report by the American Economic Association on the problem of economic instability, and a review of the committee report by Smithies.

The theoretical selections in the volume are complementary to those in the American Economic Association's *Readings in Business Cycle Theory.* Only one article is common to both books. The present collection is broader in scope than the earlier volume—including as it does readings on historical episodes, regional aspects of cycles, and econometrics—and covers more recent theoretical developments. It will find a place on the shelves of graduate as well as undergraduate students.

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Money and Banking; Short-Term Credit; Consumer Finance

A Study of Moneyflows in the United States. By MORRIS A. COPELAND. (New York: National Bureau of Economic Research. 1952. Pp. xxxii, 338, A235. $7.50.)

In his introduction, Winfield Riefler gives us some background information which is important to an understanding of this unusual book. "Years went into the creation of the grand design of this study. . . . Those of us who have been privileged to know Morris Copeland through his lifetime will find that every page evokes echoes that reach long into the past—echoes from his earlier absorption with accounting . . . echoes from his sojourn at the Federal Reserve Board, where he undertook to fill in the equation of exchange from empirically derived data; and echoes from his days as Executive Secretary of the Central Statistical Board where he operated so effectively to improve the quality, the comparability and the coverage of American economic statistics. . . . There are other echoes also, more personal ones, of Copeland's preoccupation with theoretical formulations and his insistence that they be subjected to empirical verification" (p. ix).

The product of this rich and varied experience, of these years of theoretical probing and factual research is beyond any question an impressive document. Readers will find much to interest and delight them: new statistical material, sharp analysis of accounting detail, fresh discussion of familiar theoretical problems. But they will also find, I think, that this is in some ways a puzzling as well as an impressive book.

It should be pointed out, to begin with, that the author undertakes to do four different things in this study: to construct a detailed set of moneyflows accounts; to compile statistical estimates of the moneyflows thus specified for the seven years 1936-42; to examine the basic concepts of a money economy; to formulate a theory of fluctuations for use in interpreting the statistical findings.

Moneyflows are payments—or receipts, depending on which way you look at them—made by one "transactor" to another. Four major types of transaction are included in the moneyflows system, or "main money circuit," as the author calls it: final product transactions—these are payments for and "primary" distributive shares arising from the goods and services that make up the Gross National Product;[1] nonfinal product transactions; transfers, both public and private; and moneyflows through financial channels, *i.e.*, transactions which "involve a change in the receivables of one transactor and the payables of the other . . ." (p. 57). As a by-product of his work on financial moneyflows the author also gives us estimates of the balances from which they are derived.

The transactors who engage in these various types of dealings with each other are divided into eleven groups: households, industrial (in the broad sense) corporations, farms, unincorporated industrial enterprises, the federal

[1] Except for imputed items, which are excluded from the moneyflows system. There are also differences in timing as a result of the fact that moneyflows are measured on a cash and GNP on an accrual basis.

government, state and local governments, banks and U. S. monetary funds, life insurance companies, other insurance carriers, security and realty firms, and the rest of the world. Intragroup transactions (*e.g.*, payments by households to other households) are included in the totals[2] but play little part in the subsequent theoretical analysis. In deciding how to divide the economy into sectors the author seems to have been guided largely by statistical considerations: "Conventions and to some extent statutes have provided a basis for handling the problems of classifying transactors. In dividing the economy into sectors, we shall follow in general the Standard Industrial Classification, and, in deciding when we have one transactor and when several, we shall for the most part take our cue from federal corporate income tax returns" (p. 38).

While the total of moneyflows is larger than Gross National Product, it falls short of the total of all transactions in which transfers of money are involved. "The main money circuit excludes a large volume of money payment transactions that are mere 'whirlpools at the side of the main flow': money changer transactions, agency transactions, and financial turnover transactions (*e.g.*, the repayment of a loan financed by an offsetting renewal). In 1942 45-50% of debits to individual accounts represented such mere whirlpools, in 1937 about 60 percent" (p. xxiii).

It is unfortunately impossible in a summary like this to give an adequate idea of how much skillful, painstaking analysis of detailed accounting problems the author performs in the process of working out the full specifications for the system of moneyflows accounts. This work makes up a large—and, for readers who are interested in the technical problems of social accounting, or who merely enjoy refined accounting analysis for its own sake, very rewarding—part of the book. Its usefulness is broadened by frequent comparison of the way items are handled in the moneyflows and in the national income accounts; these sections of the book can, in fact, be highly recommended to anyone who wants to improve his understanding of the technical aspects of national income accounting.

Construction of the detailed scheme of moneyflows accounts and of the statistical estimates to fit them would have been a big achievement by itself. But the author has not been satisfied to rest on his laurels as accountant and statistician. He has gone on to "re-examine" the conceptual framework of the money economy, and to erect on the foundation thus prepared a theory of how fluctuations in moneyflows, and hence in general economic activity, are initiated and amplified.

His examination of the conceptual framework covers such questions as: What is money? What functions does it perform? How is the quantity of money increased or decreased? What is the proper concept of "flow" as applied to money? The answers he gives are much the same as those of other contemporary monetary theorists, *e.g.*, for society as a whole money performs a scorekeeping, for the individual a cushioning function; the money supply consists chiefly of the currency and deposit liabilities of the banking system;

[2] Except for the banking sector, for which a consolidated statement is presented, and for some netting of financial transactions (see p. 191).

changes in the quantity of money are the result of expansion or contraction of bank assets and liabilities, and can hence be influenced, though not controlled, by the banking system; the way money "flows" is more like electricity than water; *i.e.*, the "process of payment is instantaneous in the sense that no paying transactor loses title to a penny of cash until title is acquired by the payee. . . ." (p. 236). Money is thus never "in circulation" as water is (*i.e.*, actually "on its way," in the pipes or other conduits from one "reservoir" or "pumping station" to another).

Readers may be somewhat puzzled as to why Copeland devotes as much attention as he does to such questions as these. To find the explanation we must, I think, recall what Riefler says in the Introduction about the years that went into the "creation of the grand design of this study" and about the "echoes . . . of Copeland's preoccupation with theoretical formulations," echoes that "reach long into the past." Much of that preoccupation was no doubt with the shortcomings of the quantity theory as it was commonly formulated in this country in the late 'twenties and early 'thirties. Having started to work out the necessary revisions before the revolutionary developments of the mid-'thirties had occurred, Copeland apparently continued to develop his ideas independently of what was happening in the main current of monetary and income theory, coming in the end to conclusions which, at least as to the basic concepts mentioned above, are much the same as those that are now generally accepted.

This hypothesis receives strong support from the first verse of the "Alternative Statement" of his views which the author gives us at the end of the book (p. 322):

> The estimates arrayed themselves in columns and in rows;
> They showed the cash each sector held; they showed its moneyflows.
> "The time has come," the Walrus said, "To talk about inflation,
> If all the cash outside the banks is cash in circulation,
> Do you suppose that moneyflows increase as cash increases?"
> "I wonder," said the Carpenter, "Let's take this thing to pieces."

Working things out independently frequently has its advantages. But there are dangers too. These are clearly illustrated by the author's attempt to construct a theory of fluctuations. The essential points of this theory are summarized by the author as follows (pp. 259-60):

> It is convenient to think of transactors in terms of a three-party system, the three parties being called respectively bulls, bears, and sheep. Bulls are transactors who dishoard to increase their spending . . . Bears are those who stint and hoard . . . All other transactors are sheep. Ordinarily sheep will be increasing their expenditures so slowly that they hoard when the volume of moneyflows is expanding . . . (and vice versa when it is contracting) . . . To the question, How do increases and decreases in moneyflows take place? we answer then: Mainly and immediately through the decisions of individual transactors about their ordinary expenditures . . .
>
> Our hypothesis implies that changes in active cash balances are a consequence of and a necessary condition to changes in moneyflows, not a cause. The increased spending of a bull results from a decision by the

> bull. The decision is made possible by his ability to dishoard. His dishoarding may take the form of drawing down his cash balance or borrowing from or selling securities to banks. The hoarding of other transactors may take the form of increased holdings of cash or may take other forms.
>
> Much of the time the question whether moneyflows will increase or decrease is determined by whether the bulls (active dishoarders) or the bears (active hoarders) predominate. But the bulls and the bears alone do not fix the entire amount of the increase or decrease. When a cyclical increase gets under way it tends to become cumulative, *i.e.*, sheep may keep the expansion in their ordinary expenditures nearly abreast of the expansion in their ordinary receipts. On the downswing too we must allow for the influence of the sheep. Contraction of moneyflows is perhaps even more likely to be strongly cumulative than expansion.

There is, of course, nothing wrong with this as far as it goes. It is, in fact, quite similar to modern, "Keynesian,"[3] income theory. The big difference is that Copeland stops short of any inquiry into motives. He does not even ask why bulls—or bears or sheep—act as they do. In Keynesian theory, on the other hand, motivation plays a key rôle. Keynesians suggest, for instance, that one of the major reasons for a transactor's being a bull is that he sees an opportunity to make a profit by buying new capital goods. They accordingly treat investors, *i.e.*, people who are in a position to make decisions about buying capital goods, as a separate group of transactors whose actions are worth special study. There is, of course, nothing new or original about this assumption. It is a familiar feature of classical and neoclassical theory. But one of the great strengths of Keynesian theory is its willingness to draw freely on its classical heritage. By linking "bullish" behavior, for instance, to decisions about the purchase of capital goods it ties the theory of fluctuations in with the theory of investment, which had already been developed to a significant extent by earlier generations of economists and to which further important contributions have been made by Hansen, Samuelson, and others in recent years.

Copeland seems to miss this point completely. The only differences he mentions in comparing Keynesian theory with his own are differences in (1) the "level of aggregateness," (2) the use of the "accrual" as opposed to the "moneyflows perspective" (p. 250), and (3) the fact that saving and investment are concerned with the "ultimate sources of capital funds—households and quasi-households—and the ultimate uses—for additions to tangible wealth . . . ," while the financial moneyflows account "aims to reveal the immediate suppliers . . . and the immediate takers of funds" (p. 185). But surely these are merely accounting technicalities. Keynesian theory could easily be restated in terms of the moneyflows perspective and the immediate sources and takers of funds. And it has already proved itself admirably suited to development toward lower levels of aggregateness.

[3] As to the relation between modern and Keynesian in this context *cf.* A. G. Hart, *Money, Debt, and Economic Activity* (New York, 1948). "This book is neither Keynesian, anti-Keynesian, nor on the fence. On the other hand, it is definitely not *pre-*

Why is Copeland reluctant to inquire into motives? We cannot be entirely sure of the answer. But there are some clues which may be significant. One of these is a statement in the last chapter concerning "habit patterns;" "Our analysis has made little use of habit patterns. What can be done with habit patterns when observations are confined to seven years is necessarily limited" (p. 333). One is tempted to turn this statement around and say: "What can be done with seven years (or any other period) when observations bear no relation to habit patterns is even more limited." Like the Institutionalists in economics, and the Behaviorists in psychology, the author apparently hopes to derive his theory from his observations. But without any theory to begin with, without any "habit patterns" in mind to test, how can he know what things to observe? If, for example, we are to learn anything about the causes of economic fluctuations from statistics of moneyflows and loanfund balances we must divide transactors into groups which have some relation to the phenomena we are studying. We are not likely to have much success if we adopt any basis for classification that happens to come to hand; say, by age groups, or by degree of consistency in voting record, or by religious affiliation, important though these groupings are for other purposes. Perhaps if we went on indefinitely testing systems of classification we should eventually stumble on a significant one. But that of course is quite impracticable. We need to use everything we know about the way people behave to set up categories which at least have a good chance of turning out to be significant. Only in this way can we hope to narrow the range of possibilities enough to make the problem manageable.

Copeland sets up his scheme of classification, *i.e.*, his eleven transactor groups, without any explicit reference to his theory of fluctuations. He notes in passing that: "To the extent that a transactor group includes members of all three parties at the same time we may have trouble . . ." (p. 260). But apparently he sees no connection between this danger and the way in which the transactor groups were chosen to begin with. His remedy is simply to increase the number of groups, still without inquiring into the motives they might have for behaving in one way rather than another in relation to fluctuations in economic activity.

Actually, Copeland's practice is better than his theory. Although he does not explicitly relate his transactor groupings to his three-party theory of the bulls, the bears, and the sheep, it turns out that there is a certain amount of correspondence between the two. This correspondence is not nearly as great, however, as it could be. By rearranging transactor groups and reclassifying types of transactions in ways that are appropriate to test various hypotheses, other investigators will, no doubt, be able to make more use of the wealth of material on moneyflows and loan fund balances we have here. Copeland might have gone further in this direction if he had not been handicapped by his inhibitions against using "subjective" theory. This should not, however, obscure our recognition of the important job of statistical spade work he has done, work which will facilitate the efforts of all future workers in this field.

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La Federal Reserve et les difficultés monétaires d'après guerre 1945-1950. By MARCEL RIST. (Paris: Librairie Armand Colin. 1952. Pp. xiii, 365. 1100 fr.)

In the literature dealing with the rediscovery of monetary policy following the oblivion of the 'thirties and the 'forties, this book on the Federal Reserve System and the postwar monetary difficulties has a special place. Written by Marcel Rist, the grandson of Charles Rist, the dean of the French economists, the book has the distinctive French quality of making clear an essentially complex matter. True, the American reader acquainted with the Douglas and Patman committees' material and with the writings of Chandler, Goldenweiser, and Roosa will find little that is new in Rist's account of the postwar monetary developments and policies in the United States. Nevertheless, he will greatly enjoy the skill with which the author handles the sequence of events and the course of the monetary policy debate; and he will be glad to know that those French and other European readers who do not have access to American sources can find in Rist's book a fair and comprehensive interpretation of the postwar monetary history of the United States.

For the American reader, the chief interest in the book rests in the fresh look that the author takes at the postwar American experience. Rist first endeavors to appraise this experience from the viewpoint of monetary theory, more particularly in the light of the Hicks-Hansen liquidity function model, which he has somewhat rewritten and newly qualified in order to make it more realistic; the upshot is quite interesting even though it adds little, I believe, to the conclusions arrived at otherwise. Rist then sets forth the American experience within the general framework of central banking trends as these have developed during the postwar years. This is the most valuable part of the book and deserves close scrutiny.

Rist's contribution to the understanding of the American experience is threefold: he initially formulates a "theory of government bond support"; he then reviews "the possibilities of monetary policy under government bond support"; and finally, he confronts the American experience with "the theory of central banking." The support-policy experience in the United States is, of course, a unique field of study, since those few other countries that had attempted a similar course had given up much earlier (in the longer-term market, the United Kingdom in 1947 and Canada and Sweden in September 1950); as to those continental Western European countries that "insulated" a portion of government debt by requiring the commercial banks to hold secondary reserves in the form of government securities, they had done so for the purpose of restraining private credit rather than of stabilizing the terms of government borrowing, and indeed had raised interest rates as an integral part of the restrictive monetary policy. The uniqueness of the American experience is, therefore, in itself a sufficient explanation why a European student should be tempted to learn and write about it. Rist apparently also wanted to investigate, in its various phases and its outcome, a policy that he regards as having been contrary to one of the basic rules of traditional central banking, namely that credit availability can be effectively controlled only

through general or quantitative action, which in turn implies a flexible interest rate pattern.

It is from this viewpoint that Rist systematically analyzes the psychological, financial, and economic consequences of the support of the government bond market by the central bank and the resulting monetization of the government debt, reviews the controversy between the monetary and the fiscal authorities that marked the United States scene from 1945 to early 1951, and endeavors to define the field that is left under these circumstances for monetary policy. Rist's conclusion is that, within the framework of such a support policy, the discount rate ceases to be an effective instrument, and increases in reserve requirements can be nullified by the sale of government securities by commercial banks in order to obtain reserves; nor can fiscal policy, including the accumulation of a budgetary cash surplus, be effective so long as the economy remains abnormally liquid. True, postwar inflation in the United States was limited; but that was the result principally of the adaptability and productivity of the American economy and of the willingness of the American public to retain cash, idle deposits, and government securities; in Western Europe the same policy and practices would, in Rist's opinion, end in a much greater inflation.

Against this background Rist puts forward in his final chapter the lessons to be drawn from the rediscovery of monetary policy in the United States. Rist believes, first, that effective central bank control has not been necessarily impaired by the enlargement of government debt and its wide distribution. Secondly, he strongly feels that no particular importance should be attached to any given level of interest rates, but rather that attention should be focused on credit availability. His third general observation concerns the critical rôle of the lenders in the chain through which small changes in interest rates (or the mere expectation of such changes) induced by the monetary authorities may have appreciable influence on economic activity.

What I miss here are certain qualifications and reservations that would make Rist's conclusions somewhat less categorical. More particularly, I find some difficulty in Rist's underlying assumption that the objectives of debt management differ of necessity from those of monetary management. The problem of assuring lodgment of the debt during a phase of credit restraint is a real one even though economic and monetary considerations rather than merely those of technical placement should be given the decisive weight. Nor can monetary and credit policy be worked out in the complex real world merely on the basis of elaborate models built on a few simple assumptions: to be effective, it must rest on the empirical judgments of those responsible for it, with both the money and capital markets and the general economy regarded as an integrated whole. Finally, Rist does not seem to have fully realized that the central bank is not the sole arbiter of economic and financial policy. Nevertheless, with these qualifications and reservations, Rist's book is a notable contribution to the recent writings on monetary theory and policy and deserves to be read carefully on both sides of the Atlantic.

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Central Banking in Undeveloped Money Markets. By S. N. SEN. (Calcutta: Bookland Ltd. 1952. Pp. viii, 246. 18*s*.)

The great interest shown in problems of economic development of underdeveloped countries makes this book a timely and useful publication. Much of what is being written about development suffers from vague generalizations since the problems involved are formidable and the geographical differences infinite. If we want to get beyond these generalizations, more detailed studies like the present one are needed. They are difficult to do. The material to be digested is large and diverse, thus making it hard for the writer to come to some tentative conclusions which are applicable beyond a very limited regional field.

Mr. Sen has written a good book which can show those who are interested in development the complexity of even limited aspects of their vast problem. It is also a concise study of modern central banking in countries which, though important, are, as a rule, not dealt with in the standard literature.

For the student of money and banking it is always fascinating to watch the time gap between the emergence of financial problems and the ability of financial institutions to deal successfully with them, or to realize that some central banks were obsolete before they started to operate. Sen's book illustrates the opposite extreme. Central banks in undeveloped countries were anachronistic because their credit instruments were designed for far more developed financial systems. In this little volume we find many case studies which can be used as warning for those who believe that they can help underdeveloped countries by directly applying to them what may be proper policies for highly developed economies. For instance, what use is there in suggesting the raising or lowering of the Bank Rate when commercial banks and other financial institutions do not discount at the central bank?

Sen gives an excellent account of the difficulties met in the application of such conservative monetary instruments as discount or open market policies in undeveloped money markets. He comes to the conclusion that the changing of reserve requirements, together with qualitative controls, should be heavily relied upon. In addition, he points out that central banks in countries with undeveloped money markets will probably be charged with the duty of helping finance development. This tends to widen their task beyond the mere control of commercial banks.

Considering the important tasks which these central banks have to fulfill and the limitations which undeveloped money markets impose on the use of traditional credit instruments, Sen comes to the conclusion that a combination of very broad powers (such as were given to those central banks which were established after World War II) with a minimum of "detailed statements of what the bank is to do under every possible sort of occasions" would be the best arrangement. However, he realizes that such a system "depends more upon the men whose business will be to run the machine than on any legal formula."

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Business Finance; Investments and Security Markets; Insurance

Conference on Research in Business Finance. Held under the auspices of Universities—National Bureau Committee for Economic Research. (New York: National Bureau of Economic Research. 1952. Pp. xviii, 340. $5.00.)

Here are the texts of eight papers presented and discussed at a conference held by the Universities—National Bureau Committee in June 1950 to appraise the contemporary status of research in business finance. Planned and conducted as the conference was, the report could not and does not emerge as a monograph. With more advance communication between the participants there could have been less reiteration of the obvious and the space and talent consumed in duplication could have been used to treat areas which the survey left untouched.

Each paper is a special study in itself and the discussions that follow the papers extend well beyond the bounds of mere comment. By way of example, the paper entitled "Factors Influencing Managerial Decisions in Determining Forms of Business Financing" (a joint study by Neil H. Jacoby and J. Fred Weston) is 40 pages long and the discussions run to 11 pages; the paper in two parts by Edgar M. Hoover and Burton H. Klein, and Albert R. Koch, dealing with "Factors Influencing the Demand for Funds by Business Enterprises and the Problem of Projecting Business Capital Requirements," with discussion and comment, takes up 15 pages. This review, therefore, will be confined to general observations.

The reports are replete with references to the inadequacy, incomparability, and unsuitability of available statistical data. For example, when the flow of funds into and out of the corporate system, or an industry, or a firm is studied by the "sources and uses" approach, the bases for reconciliation of "surplus" and valuation adjustments are revealed so dimly in the income and balance sheet data that one wonders (again, as often before) why companies take the trouble to prepare these statements at all, or the Bureau of Internal Revenue to tabulate them.

It is encouraging to find the conference paying its respects to the dynamic or operational approach in contrast to the older too-long-revered static or ratio-analysis approach. One participant observed that, since most of the circulating capital of a business comes from sales, financial analysis should begin with sales methods, volume and pricing policy, and include the time factors involved. Another participant found a definite association in a growing firm between the stage and rapidity of its growth and its sources of funds. Another proposed that equity and debt capital for small and medium-sized businesses be studied by questionnaire; inquiries should be made concerning the "duties and capacities of present management, as indicated by training and experience of officers and the utilization of professional and technical assistance"—a considerable departure from balance sheet analysis! Still another urged that old firms be handled separately in global studies of asset and capital structures because new firms obtain capital from different sources and have more fixed assets.

The empiricists present complained that what men do, as put down in their records, does not reveal what men think or why they think as they do. Opinion polls were proposed: "What is the main reason you went into business for yourself?" Returns from one such revealed that two-thirds were motivated by independence, ambition, and opportunism. By contrast, there were studies which purported to find an "investment function" that was primarily related to profits. (Or are *opportunism* and *profits* interlaced?) The policy-makers, anxious as always to maintain "general economic stability and growth," reported on their search for projections, either empirical or logical, by which they might keep the investment/output ratio more stable than it has been in the past. Toward this achievement they also pleaded for better statistics and better models. As Keynesian as are the bases for projection models, one paper found that interest rates were no longer important in investment decisions and another expressed the doubt that an investment/national-product percentage established for one period could be expected to apply in the next: "Investment motives in our society are extremely complex." A list of factors determining the decisions of management with respect to kinds of financing may be found on pages 167-72, several of which could be subjects for doctors' theses or for staff research.

Old-fashioned deductive analysis did receive a respectful hearing. The paper, "Costs of Debt and Equity Funds for Business: Trends and Problems of Measurement," contained a well-reasoned treatment of basic concepts and basic issues. The author began with the hypothesis that it was to the businessman's interest to maximize his capital instead of his profits and proceeded to show that capital, when taken as the discounted value of anticipated income, had important implications for cost analysis and investment decisions provided that income be forecast in full recognition of the difference between the capitalization of net income and of net operating income—leverage being understood as a decisive factor in the choice between equity and debt financing.

Econometrics had its day in the last paper preceding the "Summary." For those interested and with faith in this methodology the paper will suggest further avenues to explore: the assumptions, the variables, and the correlations can be re-examined, rechosen, and recomputed, respectively or in any order; or the data can be further questioned and further refined, ad infinitum.

The book should prove useful to teachers with the time and to business firms and government agencies with the budgets for financial research, as well as to professors who conduct seminars in finance or help candidates to choose subjects for dissertations. The papers and discussions will suggest new areas to be worked and problems that remain to be solved.

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Introduction to Business Finance. By Bion B. Howard and Miller Upton. (New York: McGraw-Hill. 1953. Pp. x, 565. $6.00.)

This is a textbook on business finance that differs considerably both in

content and angle of approach from the more widely used books on corporate finance. The authors have sought to correct what they conceive to be the defects in the traditional treatment, namely the over-emphasis on the financial problems of large corporations, the needless concern with financial institutions and instruments, and the use of space to discuss the socio-economic aspects of corporate financial policies. All of these things presumably distract the student from the central problem of administering the finances of a business and, moreover, they correlate badly with other courses taken by the student of business.

To overcome these assumed defects the authors have written a volume that is straight and undiluted *financial management*. Conceiving the most important function of a course in finance to be teaching the student how to maintain the solvency of a business and maximize its profits, the first half of the book is devoted to flow-of-funds analysis, and to budgeting and financial planning. This, in the main, represents the most radical departure from the traditional approach to an understanding of the financial problems of business. The remainder of the book is concerned with the more familiar material on various possible sources of funds. Here the authors emphasize short-term rather than long-term financing; but on the whole this section does not differ greatly from most of the existing textbooks on corporate or business finance.

Subject matter dealing with forms of business organization and types of debt and ownership securities is extremely condensed and presented in an early chapter on the sharing of risk, income and control. Similarly such topics as the valuation of a business and business failure, recapitalization and reorganization are treated as non-recurring financial problems in a brief section at the end of the book. Here the student will find almost no mention of the complicated legal procedures that are a part and parcel of the reorganization process and are usually allotted much more space. But this is in keeping with the flavor of the entire book which characteristically minimizes the legal and regulatory aspects of financial practices. The student will know that there are such things as the Securities Act of 1933, the Securities Exchange Act of 1934, and the amended Bankruptcy laws, but that is about all, for these receive little systematic treatment anywhere in the book.

This is not necessarily a weakness, for it is clear that the authors have consciously chosen to strip from the study of the financial management of a business material that they consider to be dispensable or even extraneous. Presumably most of the legal and regulatory aspects of finance can be left to the lawyers; just as the study of the nature of corporate enterprise, its position in our economic structure, and the problems of public policy it raises can be left to economists, political scientists, or philosophers. The proper study of finance is finance. And the financial manager should master the techniques of administering cash so as to maintain solvency and provide for growth. That is job enough.

This is clearly an entirely sound position to take. The test of a good textbook is the purely pragmatic one of whether it is an effective vehicle for

achieving a particular educational purpose. Howard and Upton have succeeded in providing the student of business with a thorough and reliable guide to a basic training in planning and administering the funds of a going concern, whether large or small. In general the authors build this training upon the student's knowledge of accounting—and a good grasp of accounting principles and procedures is presupposed—showing how the balance sheet and profit and loss statement can be analyzed and supplemented to reveal financial condition and the sources and uses of funds. From this they move to a long and detailed discussion of financial planning and budgeting, which, because of the unavoidable intricacies of the subject will be the hardest for the beginning student to grasp. This is the heart of the book and lends much to its distinctive character.

The remainder of the book deals with short-term sources of funds—trade credit, commercial banks, commercial paper houses factors, etc., and long-term sources of funds—bonds, stocks, loans, and owner investment. There is also a chapter on term loans and equipment financing. Here the treatment is more or less traditional with perhaps somewhat more complete coverage of short-term financing than is usually found, and with emphasis on day-to-day practical problems of all types of business. Incidentally, the reader might be inclined to ask if detailed and intricate financial planning for very small business concerns is at all realistic.

The authors have used illustrative material—usually tabular in form—with good judgment and balance. Their style of writing is direct, concise, and clear. Footnotes are reduced to a minimum. List of questions are appended to each chapter for those who wish to use them, but there are no references for further reading. Perhaps the subject matter could have been made to come alive a bit more if there were more references to actual situations and incidents, but the cost of expanding the wordage may well have been too great.

There is ample evidence of care and competency in the authorship of the book. There is no doubt that it is written by men who know the subject well and who from experience are convinced that this is the most effective way to teach it. At a few points one might quarrel about matters of emphasis, but few serious errors have crept into the book.

For those who want a strictly vocational approach to business finance, and wish above all else to train the student in the techniques of financial management, this volume has much to offer. Although the student will find the going somewhat laborious and detailed at the beginning he will be amply repaid for the extra effort—if he wants to know financial management. And many teachers who feel that existing texts are too broad in scope and give too little attention to detailed procedures will welcome this practical textbook and find that it can be used effectively in business finance courses where the student has had previous work in accounting and financial institutions.

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International Economics

La Communauté Européenne du Charbon et de l'Acier. Par un groupe d'étude de l'Institut des Relations Internationales de Bruxelles. Cahiers de la Fondation Nationale des Sciences Politiques, 41. (Paris: Librairie Armand Colin. 1953. Pp. 338.)

Der Schuman-Plan: Eine Untersuchung im besonderen Hinblick auf die deutsch-französische Stahlindustrie. By DR. CARL HORST HAHN. (Munich: Richard Pflaum Verlag. 1953. Pp. 158.)

Der Schuman-Plan im Europäischen Zwielicht. By FREDERICK HAUSSMANN. (Munich and Berlin: C. H. Beck'sche Verlagsbuchhandlung. 1952. Pp. ix, 266.)

Le Plan Schuman: Ses mérites—Ses risques. By J. F. KÖVÉR. (Paris: Nouvelles Editions Latines. 1952. Pp. 232.)

Le Plan Schuman dans la perspective Luxembourgeoise. By LÉON METZLER. (Luxembourg: Imprimerie de la Cour Joseph Beffort. 1951. Pp. 98.)

Das Monopolverbot im Schuman-Plan. By ROBERT KRAWIELICKI. (Tübingen: J. C. B. Mohr [Paul Siebeck]. 1952. Pp. ix, 122.)

The literature on the Schuman Plan is already voluminous, and miscellaneous in quality and usefulness. A German bibliography published early in 1953 lists over 1300 items, the majority, of course, magazine articles and pamphlets.[1] A few of these are of considerable value for their analysis, their facts, or their expressions of points of view; most are descriptive, and therefore inevitably repetitious, or they present well-known arguments uncritically. Parliamentary debates, including committee reports, are by far the most interesting and enlightening parts of the official literature, though government pronouncements on the aims and rationale of the heavy industry pool are not to be neglected. A new flow of important publications is now coming from the European Coal and Steel Community, which began functioning in the fall of 1952. So far this material includes a *Journal Officiel,* published from time to time, that records the acts of the High Authority and other agencies, and, in supplements, prints the debates of the Common Assembly; two reports by the High Authority; a mimeographed series of press releases under the general heading of *Bulletin d'Information;* and several mimeographed and printed statements and reports.

There are also a number of books devoted to the Schuman Plan, most of them listed above. The detailed, careful, objective analysis prepared by a study group of the Institut des Relations Internationales of Brussels may well become a standard work. This book is primarily concerned with organizational and, to some extent, juridical matters, especially the distribution of powers and functions among the organs of the Community and between the Community and the participating governments and enterprises. This may sound arid and uninteresting to those who want to know about the economic and

[1] Institut für Europäische Politik und Wirtschaft, *Bibliographie zum Schumanplan, 1950-1952* (Frankfurt am Main, 1953), 151 pp., mimeographed.

political problems of the Coal and Steel Community but the analysis has a significant bearing on these problems and is of basic importance for anyone who wishes to make a close study of this new venture in European cooperation. Take, for example, pages 35 to 53, where over one-hundred powers of the High Authority are grouped in fourteen categories, according to that body's freedom of action, its need to consult other bodies or get their agreement, etc. This sounds dry as dust, and so it is if you try to read it through, but it is an essential step in studying one of the key questions about the Schuman Plan: How much truly supranational authority is there, and how much is left to national governments, acting separately or through the Council of Ministers?

Much of the Belgian group's book brings together and interprets the provisions of the long and complicated treaty, a service that is particularly valuable in the matters of prices, cartels and concentrations, and the relations of Schuman Plan countries with third countries. Several more general chapters discuss the organizational nature of the Coal and Steel Community and compare it to other kinds of international arrangements and federations. There is a systematic comparison of the aims, organization and methods of the Schuman Plan with those of the prewar international steel cartels; and several contributors refer to the compromise of economic philosophies apparent in the treaty. No striking new conclusions about the Schuman Plan emerge from this book, but the study group has produced a painstaking handbook and guide that throws light on the treaty and provides tools of analysis for which those who come after should be grateful. A job worth doing has been well done and will now not have to be done again.

Dr. Hahn begins with an analysis that incorporates many of the criticisms of the Schuman Plan that have been made in Germany. Allied controls over production, the lack of recent investment in heavy industry, and decartelization give Germany a poor starting position compared with France where steel production has been expanded and modernized, according to this view. All the other countries in the Community have a common interest in getting easier access to German coal, but nothing is done to help Germany get iron ore: French African supplies are not covered by the treaty and the new arrangements may hamper Germany's freedom of action in exporting coal in exchange for Swedish iron ore. This case rests in part on the assumption that the members of the High Authority will continue to reflect the interests of the countries from which they come, instead of acting as supranational officials, pursuing the best interests of the whole Community. Hahn prefers the more flexible arrangements of the prewar cartels, in which a member's influence was closely related to his economic strength; he also argues that a more workable compromise of national interests would be assured by requiring unanimity on major issues.

The main contribution of this book lies in a long chapter examining the possible effects of the Schuman Plan on costs in the French and German steel industries. Hahn expects no radical changes. Lorraine iron ore is of secondary importance to the Ruhr, and the treaty will not help reduce the cost of

Swedish, Spanish or African ore. German coke is unlikely to be much cheaper in France than it was before, for a variety of reasons; moreover, in Hahn's opinion, new processes will soon permit Lorraine to supply its own coke. Wage rates plus taxes and social charges vary less than is ordinarily supposed, according to Hahn's calculations, and in any case are much less important than raw materials in determining steel costs. He adduces many other considerations to support this line of argument. At times one suspects Hahn of the *de minimis* fallacy: having calculated that not much reduction in costs will result from this or that effect of the treaty, he dismisses the subject without allowing for the possible cumulation of small items. Nevertheless, the argument is fairly persuasive, at least so far as the first few years of the Schuman Plan are concerned.

It is not always clear how far into the future Hahn means to project his conclusions. Some of the arguments about the level of costs would seem to apply for a long time to come, but might be offset by changes resulting from the common market and the High Authority's guidance of new investment. Hahn argues, however, that a common market confined to heavy industry is unlikely to help much in raising the general level of European demand. Only if a large market develops for durable consumers goods and other products using steel can the new French continuous strip mills bring costs down to American levels, in Hahn's view. (Recent studies by the Economic Commission for Europe, on the other hand, stress the effects of lower steel prices in stimulating demand). Nor does Hahn think that the Schuman Plan can do much to stabilize the European economy, so long as it is confined to coal and steel.

These considerations reinforce a view Hahn shares with many who have examined the Schuman Plan: that it cannot work effectively so long as monetary and fiscal policies are wholly in the hands of national governments. In these circumstances, Hahn believes, the price system cannot work effectively in the common market and investments will continue to be made primarily on political grounds. Believing that for political reasons the Schuman Plan must be made to work, he argues that the High Authority must begin by performing cartel-like functions. Then, the only way to avoid some kind of super-*dirigisme*, will be to create a unified European market in all fields. Not all of Hahn's arguments are convincing, but his thoughtful and knowledgeable book needs to be taken seriously. It is valuable, too, for the large body of rather detailed information it contains on the French and German steel industries.

As Haussmann's title indicates, his main aim is to show that the Schuman Plan is not as simple and clear-cut as many statements about it imply. The book is successful in achieving this admirable purpose even though its chapters are of somewhat uneven quality, not all of them closely related to the main line of reasoning. Some are useful reports on reactions to the Schuman Plan in major countries, illustrated by copious quotations. There is a heavy attack on the German neoliberal school of economic thought but it is not always clear whether Haussmann is objecting to what he considers a false interpretation of the treaty by the school or an undue influence of this line of thought on the drafting of the treaty. There is an interesting analysis of

the probable connection between the Monnet Plan for French investment and the expected enlargement of the European market through the Schuman Plan. Lengthy appendixes include information and statements on a variety of subjects, some of them peripheral to the main theme, and also the German text of the treaty.

Kövér's book is a good deal less critical than those mentioned so far. Much of it is a rather general discussion of what may be called the "official doctrine" of the Schuman Plan. The stress is on the hopes invested in the plan and on the great changes that may come about. But there are warnings of pitfalls and particularly of the difficulties that may result if supranational arrangements do not emerge in other fields as well. The most interesting part of the book is the commentary on the labor provisions of the treaty and the speculation about some of the political and economic problems that may arise. Kövér points out that the nature of industrial organizations may be much influenced by the treaty's stipulation that the High Authority can call for information from producers' associations only if they "give a satisfactory place in their organization to the expression of the workers' and consumers' interests" (Article 48). It would have been interesting if he had pursued this thought somewhat further and discussed its possible syndicalist or corporativist implications. In addition to the French text of the treaty, the appendix contains a useful tabulation of some of the powers of the High Authority and of the Council of Ministers.

Writing before the treaty was ratified, Metzler was fearful that in a common market Luxembourg would suffer great disadvantages because of its high wages and social charges. The longest chapter in the book, staccato, aphoristic, and very general in statement, is an exhortation for a changed attitude in Luxembourg's domestic affairs so as to ensure its ability to compete. So far as the Schuman Plan proper is concerned, the book is useful primarily for some details it gives about the special position of Luxembourg where 85 per cent of the economic activity is in coal and steel, and for a rather full statement of the view that cartels are useful instruments of industrial organization and government. At the beginning of the book the author appears to endorse the Schuman Plan, but at the end he calls for a re-examination of it.

Krawielicki participated in the negotiation of the Schuman Plan treaty as an official of the German Ministry of Justice and is now in the legal division of the High Authority. His book is an exegesis of the passages in the treaty referring to restrictive practices and the concentration of economic power. He calls attention to problems of interpretation, explains the philosophy of certain provisions, and compares the treaty principles and language with past and proposed German cartel law, with some references to French administrative law and American antitrust concepts. While Krawielicki does not elaborate any general philosophy about cartels and competition, it is plain from his analysis that he regards a free competitive market as of the essence of the Schuman Plan and interprets the treaty as providing quite clear law on the subject. Haussman devotes an appendix to a highly critical review of the book, attacking it as oversimplified law and economics. There is substance to some of these objections but Krawielicki's guidebook is something one

ought to consult before reaching conclusions about the meaning of the treaty's provisions on restrictive practices and the concentration of economic power.

Taken together these books, and particularly the first four of them, contribute substantially to an understanding of the nature of the Schuman Plan treaty, the problems facing the European Coal and Steel Community, and some of the main attitudes toward the new venture that exist in Europe. They are far from exhausting the subject and for any thoroughgoing study have to be supplemented by periodicals and documents. None of them is the comprehensive and well-rounded book one would like to have available for those who cannot devote a lot of time to the subject. So far as assessing the Schuman Plan is concerned, only one common conclusion emerges from these books, and that is the obvious and commonsense conclusion of almost everyone who has looked seriously into the matter. It is the conclusion that begins, "It all depends. . . ." So annoying to enthusiasts or to those who want to *know* what is going to happen, it is plainly the only general statement for which there is adequate intellectual warrant. So cautious a view does not encourage eloquence, but the Belgian study group's report puts the matter as well as anyone (p. 323):

> As to the future of the institution, one can say that it will depend on the policy followed by the High Authority and on the attitude adopted by national interests. The instrument exists. Without being perfect, it incorporates a balance of tendencies that makes success possible. Everything will depend on the intelligence with which the instrument is used and on the way in which the first difficulties are resolved.

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The Sterling Area. By A. R. Conan. (London: Macmillan. 1952. Pp. ix, 192. 16 *s.*)

Britain, the Sterling Area, and Europe. By F. V. Meyer. (Cambridge: Bowes & Bowes. 1952. Pp. viii, 148. 21 *s.*)

The Sterling Area—An American Analysis. By The Special Mission to the United Kingdom, under the direction of John M. Cassels. (London: Economic Cooperation Administration. Washington: Supt. Docs. 1951. Pp. 668. $3.00.)

During the critical years of the postwar period, when the British pound underwent first a convertibility crisis, then a devaluation crisis, and finally a rearmament crisis, there has been a dearth of both reference and analytical material on the relationship of Britain with those overseas regions inseparably linked to British difficulties through operation of the Sterling Area system. These three books are designed to fill the gaps in our knowledge of the Area's operation and difficulties. The authors are notably successful in certain respects, only partially so or not at all in others.

The need for collected reference material on Sterling Area member countries

is met in a comprehensive fashion in the Economic Cooperation Administration study directed by John Cassels, which provides a summary of the postwar economic developments of the Sterling Area as a unit (with special reference to its dollar position), of the individual economies of independent members and colonies, and of the main commodities in Sterling Area trade—this last of special importance in view of the awakening American interest in the world resource picture. With elaborate charts, extensive tables, and a text which is clear and concise but does not go beyond a factual summary of the relevant economic information, this book will serve as a useful reference work for a number of years to come, not only for those interested in the Sterling Area or the British Commonwealth but also for all students of international economics.

The problems of the Sterling Area are both external and internal; important changes have taken place since the 1930's in (1) the Area's balance of payments position with the outside world, and (2) the internal mechanism and center of gravity among members of the monetary group. In assessing the nature of the Area's difficulties, F. V. Meyer and A. R. Conan attempt to determine whether it is the United Kingdom or the R. S. A. (Rest of the Sterling Area) which has been responsible for the balance of payments difficulties with the whole nonsterling world. Conan (p. 65) adds the total current balance of each member region and terms the sum the current balance for the Sterling Area, arguing that in 1938 the United Kingdom contributed 70 per cent of the Sterling Area deficit, whereas in 1947 the ratio was 50/50 and in 1948/49 the United Kingdom was in equilibrium while the over-all deficit was on overseas account. This is misleading, for it includes intra-Area transactions. The United Kingdom's position is made to look favorable only because it has had a surplus with R. S. A. throughout the postwar period, a surplus generated by use of sterling balances and protected by discriminatory exchange controls. Meyer (p. 71) takes account of intra-Area trade by adjusting for the change in intra-Area sterling balances (unrequited exports and imports), a technique which proves very confusing for the reader and would not seem to be any more correct than merely eliminating intra-Area current surpluses and deficits; but at any rate, Meyer gives a truer account of the relative position with the nonsterling world of the United Kingdom vis-à-vis R. S. A. than does Conan.

When, however, it comes to the responsibility for the dollar drain in particular, Meyer is inconsistent with his earlier reasoning on the total deficit, viz., that intra-Area balances must be considered in computations. As a result, he grossly exaggerates the United Kingdom's contributions to the Pool. The assertion that ". . . it is justifiable to regard any United Kingdom surplus on the balance of payments on current account as a contribution to the Pool, however indirect, if this surplus is due to a surplus with the R. S. A." (p. 78) appears untenable to this reviewer, and will no doubt seem a little unfair to member governments who have reluctantly, for one reason or another, given up dollar earnings for British goods in the face of agreements on discriminatory exchange control regulations.

Conan, on the other hand, determines his estimates of responsibility for the

dollar difficulties solely on the basis of commodity trade. Presumably he uses this technique in order to break down the position for individual overseas members, which Meyer does not attempt to do at all. Actually, fairly good approximations of total dollar drawings and contributions of individual members can be formed from bits and pieces of published material.

In spite of these statistical deficiencies, Conan draws some interesting conclusions from his evidence. He determines that the Sterling Areas's position with the nonsterling world has changed little *in real terms*, but rather that it has been the price changes which have been crucial. Before the war, the Area as a whole had a commodity deficit, both with the rest of the world and with the Dollar Area in particular. Therefore, an equal proportionate rise in export and import prices (the volume of trade unchanged) would enlarge the deficit. Such a commodity price rise does not, however, increase investment income and other invisible receipts nor the value of new gold production, both of which were used to meet the commodity trade deficit before the war. But not only did all commodity prices rise with the exception of gold up to September 1949; there was in addition an adverse shift in the terms of trade for the Sterling Area as a whole. These conditions meant that the Sterling Area in 1948 could export 171 per cent more to the Dollar Area than in 1938, import only 10 per cent more, and yet have serious dollar difficulties.

Any policies directed toward solving the Sterling Area's external balance of payments difficulties *must* take into account the internal operation and cohesiveness of the system. Interpretive analysis of the internal problems of the Sterling Area has in the past, however, been woefully weak, consisting for the most part of 30 or 40 articles written by economists or bankers. Almost all of these writers have been chained to one line of thought: the postwar Sterling Area system is a "natural" outgrowth of the *de facto* sterling exchange standard which existed before World War I and the voluntary association of the 1930's called the "Sterling Bloc"; and there has been little essential change in the operation of the network or in the traditional bonds which hold it together, viz., the large volume of complementary trade, the use of London as a financial center and source of capital, and the common political heritage of member regions. Meyer tends to perpetuate this interpretation through taxonomic analysis of the cohesiveness of the system. Conan's work, on the other hand, while ostensibly limited to a factual summary of changes which have taken place within the Sterling Area, shows in an implicit fashion at least some of the war and postwar developments which have lessened the pull of the center on overseas members, thus making the system less cohesive than is usually assumed.

Meyer is convinced that any solution of British difficulties is dependent upon an extension of activity overseas and the least painful way to accomplish this is to develop new markets. Most of Meyer's book is devoted to showing that extension into the Sterling Area and Western Europe is not only possible but profitable, both for Great Britain and for the other members of each group as well. British efforts should thus be directed toward a tightening and strengthening of already strong ties with each monetary region (in the case

of Western Europe possibly through a customs union) rather than toward nondiscriminatory multilateral trade.

The benefits which might be derived from a customs union with competing economies in Western Europe appear to Meyer to stem largely from the great external strength (bargaining or monopoly power) afforded the participants in their dealings with the rest of the world. An appendix using reciprocal-demand analysis indicates the conditions under which such bargaining power through the customs union device may be most effective. While many may question Meyer's objectives in proposing such a union, his reasoning is probably sound. This is not true, however, when he argues the case of mutual profitability of existing Sterling Area arrangements with an eye toward extending economic activity in this direction.

According to Meyer, there are two main advantages to the postwar Sterling Area system which accrue to the United Kingdom and to overseas members alike: (1) stability in exchange rates afforded by operation of the sterling exchange standard, *i.e.*, the holding of reserves in London by overseas members; and (2) access to the Dollar Pool, which reduces the need for import restriction and the accumulation of larger individual reserves on the part of member countries. Because of the complementary trade between the United Kingdom and overseas regions, the effect on exchange rates of cyclical swings in the relationship between prices of primary products and of manufactured goods will be minimized by increased loans to Britain in the form of sterling balances when the prices of primary products increase relative to prices of manufactured goods, and by the drawing of sterling balances when the terms of trade shift in the opposite direction. Without such a union, a decline in primary product prices which was more severe than a decline in prices of manufactured goods would mean appreciation of sterling and a consequent intensification of the adverse shift in terms for primary producers. Similarly, a primary product boom would, without monetary union, mean an even greater favorable shift in terms, because sterling would be devalued. Alternative gains and losses under different conditions are carefully worked out by Meyer, but the general conclusion is that overseas members of the Sterling Area gain as much as, if not more than, the United Kingdom by stabilization of the external value of sterling through operation of the sterling exchange standard.

The advantages of the Sterling Area financial mechanism have traditionally been an important cohesive element. But stability in exchange rates is not costless, and Meyer throws in the "costs" as merely an afterthought. First, there is the fact that the burden of building up reserves (in the sense of giving up goods) falls on the overseas members; they are lending to Great Britain and withdrawing their own loans, not vice versa. Secondly, while shifts in real income *consequent upon changes in the terms of trade* may be minimized, as Meyer indicates, by stability in exchange rates under the sterling exchange mechanism, stabilization of members' internal economies is probably thereby made more difficult. For example, in a period when primary product prices were falling by more than prices of manufactured goods, the deficit would probably be larger, and the deflationary income, price, and money supply

effects more severe in the overseas country if the external value of sterling remained unchanged than if sterling were appreciated.

Conan points out that the continued strengthening of desires for monetary independence on the part of overseas Sterling Area members (begun with the establishment of central banks) runs counter to the present nature of the Sterling Area financial network. Of course, membership in the Sterling Area does not prevent altering the value of a currency relative to sterling. The very fact that members have done so (New Zealand in 1948, Pakistan in 1949, and Iceland in 1950) indicates that there are limits to the advantages of stable exchange rates, although it is true that members have been reluctant to change parities, choosing often to adopt controls—even on Sterling Area transactions—rather than vary the exchange rate. Intra-Area restrictions in the postwar period have been used much more extensively than Meyer indicates (p. 31), especially with respect to Far Eastern member countries.

Furthermore, the financial advantages of the Sterling Area system, such as they are, form only one of many factors which must be considered by overseas members, and they are advantages which could be enjoyed without full membership, as Egypt has shown since 1947. Meyer seems to think only in terms of two alternatives: full membership versus freely fluctuating, or in some cases variable, exchange rates. But a member could accept transferable account status and handle its own dollar reserves if it wished to, or it might achieve exchange rate stability by holding reserves in various countries including the United States, especially if, as is true in a number of cases, the United States is beginning to rival Britain as a trading partner. The ties which might enable Great Britain to extend its markets into the overseas Sterling Area are primarily members' interest in Britain as a source of capital, in Britain as a holder of balances which may be blocked, and in the Dollar Pool, and only secondarily the tie to the financial mechanism.

Meyer recognizes the Dollar Pool consideration, but he makes no attempt to analyze the drawings and contributions of individual members. The Dollar Pool *is* a tie for most independent members; in fact, most drew more from the Pool than they contributed between 1946 and 1952, the exceptions being South Africa (which does not directly contribute to the Pool but sells gold to Britain by agreement) and Ceylon. But Britain, without aid, has easily been the largest single user; its unaided dollar deficit plus that of some of the colonies have together exceeded by a substantial amount the net contributions of the few dollar-earning colonies, notably Malaya and West Africa. Thus, if American aid were sharply reduced or eliminated, the Pool might prove to have little attraction for independent members of the Area. The Ceylonese government has been desirous of, and partially successful in, maintaining its own dollar reserves. Australia and India both considered leaving the Dollar Pool arrangement when they were earning rather than drawing dollars in 1950.

Both the financial mechanism and the Dollar Pool are thus tenuous bonds for the overseas Sterling Area, clearly not the one-sided considerations that Meyer indicates. But the hold over members through control or potential control of capital outflow from Britain and through the possibility of blocking

and releasing the sterling balances has also been important. Meyer takes no note of either of these factors in considering possible British policy. He states that "The United Kingdom has never imposed any restrictions on the inward or outward flow of private sterling funds from and to the R. S. A. . . ." (p. 31). This is not true. Through control over capital issues, Britain has been able to govern borrowing from abroad on the London market, and this device was used in the gold agreement with South Africa in 1949. The potential restriction of capital outflow has always been present, and clearly Britain would be reluctant to send scarce capital funds to a country which chose to give up full membership for a transferable account status. But how important today is this traditional attraction for overseas countries? Conan shows in Chapter 4 that the prewar debtor-creditor relationships within the Sterling Area have changed markedly. Overseas countries have greater flexibility because interest and dividend payments to the United Kingdom have shrunk so considerably, and the existence of sterling balances has meant that dependence on Britain for new capital funds has diminished. Even when the balances are down to working minimums, it seems doubtful that the British can supply much of the capital which will be needed, and if this is so, member countries are bound to look elsewhere.

Elimination of "excess" balances (envisaged by 1956 for India, Pakistan, and Ceylon under the Colombo Plan) will remove the last ace Britain has had up her sleeve as a means of maintaining control over the Sterling Area. While Britain has been more than generous in releasing sterling balances, overseas members, especially India, have clearly recognized that pressure could be used if necessary along these lines, as is clear from accounts in the *Eastern Economist* and elsewhere.

The sparse reports on recent negotiations between Britain and the United States indicate that the British government has been reading between the lines of Conan's book rather than accepting Meyer's conclusions. Undoubtedly, the British have felt pressures from overseas members of the Sterling Area on the need for convertibility and some closer link to the dollar rather than a further turning inward such as Meyer proposes.

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Foreign Aid by the United States Government 1940-1951. Supplement to the *Survey of Current Business*. Prepared by the Clearing Office for Foreign Transactions, Office of Business Economics, U. S. Department of Commerce. (Washington: Supt. Docs. 1952. Pp. 118. $1.00.)

This volume brings together in comprehensive and convenient form the record of total United States government foreign economic aid over the eleven-year period from July 1940 to July 1951. More recent data on United States foreign aid since July 1951 are published in periodic articles of the *Survey of Current Business*, the last of which appeared in the March 1953 issue.

It is surely no exaggeration to say with the editors of this book that "the

foreign assistance rendered by the United States and described in this volume represents a series of programs unique in economic and political history." The total aid furnished to foreign countries (exclusive of our contributions to the Monetary Fund and the International Bank) over the eleven-year period aggregated 82 billion dollars, of which 49 billion dollars was provided during the war period. Reciprocal foreign aid to the United States offset a part of this total, so that the net aid extended to foreign countries by the United States government totaled 72 billion dollars.

If we add to these over-all figures the amounts of United States government aid extended from July 1951 to the close of 1952, the gross aid figure rises to 90.5 billion dollars and the net aid total is nearly 79 billion dollars. The net foreign aid extended by the United States government for all purposes since the close of the second World War through 1952 totals 38 billion dollars, only three billion dollars less than the net aid provided by the United States government to other countries during the five-year war period. It seems altogether likely that the 1953 figures will cause the totals of postwar foreign aid of the United States government to rise above the dollar total of our wartime lend-lease effort, once—not so very long ago—regarded as the all-time high of imaginative national effort in surmounting the limitations of conventional international finance.

The present volume is not intended to be an appraisal of the results of the tremendous and persistent efforts of the United States government to shape the course of international development over the last dozen years. Nor is it meant as a theoretical analysis of our international economic relations. Its purpose is, rather, to present and classify the voluminous and complicated facts in an orderly and systematic manner as a basis for theoretical speculation or policy formation. As such, it is indispensable for any thorough study of the rôle of the United States in world affairs.

The illustrated main text of the book emphasizes three aspects of our foreign aid. First, it explains the basic objectives of the different aid programs and the circumstances out of which they arose. Secondly, it describes the geographic distribution of aid by countries and main geographic areas; and finally, it presents an historical account annually and by periods of the magnitude of United States aid and the shifting emphasis from grants to credits and back to grants. This is followed by an appendix of statistical tables with full explanation of the concepts and definitions employed in the compilation of the data, and a legislative appendix summarizing the major legislation relating to foreign aid from 1940 to 1951. Most readers would probably agree that the facts presented here flow in such orderly and abundant profusion as to satisfy even the most vigorous intellectual appetites for some time to come.

Among the many data assembled in this volume this reviewer's eye was caught by Table H which shows total credits of nearly 12 billion dollars granted to and utilized by foreign governments in this period, of which between 10 and 11 billion dollars are still outstanding. These foreign debts had grown very rapidly in the years 1946-1948 prior to the beginning of the European recovery program, and continued to expand thereafter, though at a much slower rate. Table K projects the contractual debt service on this

foreign indebtedness through 1961, showing that amounts between 400 and 500 million dollars annually are scheduled to be paid to the United States by foreign governments in interest and repayment of principal on accumulated intergovernmental debts. These two tables may help to remind us—if any reminder is needed—that our balance of payments problems and the policies pertaining thereto are likely to be as important an item on the agendas of future international conferences as they have been in the recent past.

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Banking and Foreign Trade. A series of lectures delivered at the Fifth International Banking Summer School, Oxford University, 1952. (London: Europa Publications Ltd. 1952. Pp. 256. 15 *s*.)

The postwar period has not exactly displayed a lack of writing on international economic problems. Faced with an avalanche of books and articles, the general economist will find the present volume a useful survey of the most important recent trends and policies in international economics. It can be assumed that this is what the book was designed for, and on this score it comes out well. A group of bankers, economists, and civil servants deal, each from his own viewpoint and philosophy, with some particular aspect of the total picture. The selection of speakers is on the whole good, although the caliber of the papers is uneven. This is perhaps unavoidable in a joint enterprise of this nature.

For the specialist in the field the volume has much less to offer. It does not reveal any new insights, and the papers which deal with policy questions express opinions which are on the whole familiar in the literature. For example, the reader will look in vain for new approaches to the pressing problems of discrimination and convertibility. The one exception is, in this reviewer's opinion, a highly interesting paper by R. F. Kahn in which he discusses the postwar monetary and commercial arrangements. His position is, briefly, that the nondiscriminatory elements in the Articles of Agreement of the International Monetary Fund are much less objectionable than the corresponding rules in the ITO Charter and GATT. But let me use his own concluding words: "When I offer, in perhaps patronizing fashion, a benevolent word in favour of convertibility, as laid down in the Articles of Agreement of the International Monetary Fund, I am only following Lord Keynes, who expressed himself in favour of the use of powers of negotiation and of bilateral arrangements about trade, but wanted to be sure that in the upshot anything which resulted from trade negotiations was made possible by suitable exchange arrangements. . . . What I am saying is that if we had enough trade discrimination, harmoniously and constructively administered, we might be able to introduce convertibility on current account." Whatever the merits of his case may be, it seems to represent an important kernel in current British thinking, and as such it calls for serious consideration.

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Economic Replacement Policy. By ARMEN A. ALCHIAN. (Santa Monica, Calif: The RAND Corporation. 1952. pp. ix, 129.)

This study deals with the important problem of when to replace units of durable equipment by similar or improved units. Beginning with a formula which is correct in theory and when forecasts are accurate, it is the author's purpose to show that by computations which can be reduced to simplified form a correct replacement decision can be made. As the stream of income declines over time and possible alternate equipment becomes available, the replacement should take place when this stream of services can be secured at a lower cost or, in other words, when a new service is worth more than the increased cost. In his introductory chapter, Alchian defines these costs of providing this stream of service as related to the current value of the existing equipment, the net cost of switching to the new equipment, the cost of replacement at projected intervals, operating costs, and the operating costs of the series of future replacements. Replacement decisions will rest on the comparison of the present value of these costs with the discounted value of the service stream. Advantages and disadvantages must be compared in time and it becomes necessary to recognize the element of interest by a discounting process. This study takes pains to point out that the correctness of decisions depends on the accuracy of the data necessary for the forecasts.

The reader with mathematical facility will find in Chapter 3 a concise statement of the basic elements outlined in the introductory chapter. In short, the formulation begins with a notation of the variables and then sets out, by mathematical expressions in terms of present values, the various elements of costs (E), such as the cost of switching from existing machines to a new one or the costs of operating the present equipment. The value of the revenue or services of a machine (R) is also given expression in terms of present values. The next step, after all elements are set forth, is to give exponential forms to E and R. Thirdly, R and E are integrated in order to provide a simple and easy method of computation. For example, this process gives us six terms for cost (E_1, E_2, E_3, etc.) each of which is a product with a dollar coefficient. To afford a rapid computation these factor values are set out in the appendix. For example, to find factor IV it is necessary simply to turn to the table and read the number for the two variables and then apply the money value. Finally, there is a summation of these costs.

This study will be appraised by its readers on two entirely different levels. The first sort of appraisal will be made by a small group of theorists who are interested in replacement theory and are able to apply the techniques of advanced mathematics. The problem of replacement is really one of interest and investment. In order to see the relationship of this study, the average reader who is unfamiliar with the literature in this field might well begin with a review of parts of Irving Fisher's *The Theory of Interest*. J. S. Taylor appears to have been the first writer to set up an algebraic formula to show the determination of the life of a machine when unit cost and interest are at

a minimum.[1] Hotelling, Roos, Preinreich, and others have made modifications and new formulae to expand their treatment beyond cost comparisons. In an attempt to present an approach which would appeal to engineers and business men, George Terborgh brought out in 1949 his study under the title of *Dynamic Equipment Policy.*[2] One formula may be an improvement over its predecessor and concepts may be greatly expanded; at the same time, these mathematical theorists would agree that the replacement problem cannot be reduced to any final form simply solvable statistically. All predictions must be made on the basis of what will happen to the average machine. We cannot predict the kind of machines men may make. With psychological factors involved, it would be an extremely complicated procedure to introduce the factor of uncertainty into the formulation. Again, if wear and tear is the important factor of depreciation and production varies greatly in time periods, then a forecast of straight line depreciation is theoretically incorrect. It is extremely important to keep in mind that in these formulae we assume a constant price level and also no change in interest rates. If we believe that prices will decline, then replacement should take place somewhat later than indicated by the formula; if we believe interest rates will rise and capital will become more expensive, then there will be another factor favoring replacement. Decisions must also shift with the interest rate selected. Should we select a "pure" interest rate, a rate high enough to attract capital in the industry, or some other rate? In the absence of a reliable system of forecasting, no formula can give effect to the principle that cost and revenue factors should be measured in units of equal purchasing power instead of the customary dollar unit.[3] As we go into long periods of time, the compound interest process takes on great powers of growth and we see our data in the far away and dim shadows of discounted futurity. (At 6% the present value of one dollar in thirty years is thirty-one cents; in fifty years, it is only five cents.) Preinreich some years ago, apparently with a certain sense of futility, concluded one of his articles on this problem as follows: "I am not greatly impressed by the practical merits of the theory of economic life, although it is no doubt a fascinating subject, worthy of study for the sake of its legitimate place in economics."[4] Whatever other merits these theorists may find, Alchian appears to have made a contribution in his use of exponentials and his adaptation of the computation to electronic machines.

An appraisal on a second level will be made by business men, engineers, and accountants. As we attempt to apply the principles set forth to a particular problem or plant, certain limitations will become apparent. A possible saving through the purchase of new equipment is only one of the reasons for replacement as there might be a hazard connected with the machine causing

[1] G.A.D. Preinreich, "The Economic Life of Industrial Equipment." *Econometrica,* Jan. 1940, VIII, pp. 12-14.

[2] New York, 1949.

[3] The Rockefeller Foundation and the American Institute of Accountants, *The Changing Concepts of Business Income* (New York: Macmillan, 1952).

[4] *Op. cit.,* p. 39.

accidents and interruption of service. Does accurate data for forecasts, which the study emphasizes as fundamental, exist in every case? The central problem appears to be an inability to estimate revenue for particular items of equipment. What is the value of the services of a desk in an insurance office or the boiler of a public utility? Sales result from the combined services of many items of equipment and may also involve items of rent and monopoly elements. The fact that accountants do not as a rule accept the principle of charging interest on equity capital is not important for this analysis. It does, however, seem that such computations will have significance only when they are made for relatively short periods of time. Although this study should not be turned over to a clerk with a calculating machine, there is a real achievement in the reduction of a complicated problem to a simple and quick method of computation. Its value lies in the possibility that it presents for improvements over present rule-of-thumb methods. I do not believe that the business men who will test this study will become so involved in mathematical techniques that they will fail to rely upon independent judgment as well as the proposals in it as a guide to equipment replacement.

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Industrial Organization; Public Regulation of Business

Monopoly and Social Control. By HENRY A. WELLS. (Washington: Public Affairs Press. 1952. Pp. ix, 158. $3.25.)

Mr. Wells here essays a formidable task. He tries to analyze the American monopoly problem in terms of man's persistent attempts to modify and control his social and economic environment. Given Wells' brevity of treatment and choice of emphasis it is not surprising that his effort is largely unsuccessful.

Wells' analysis and prescriptions rest on several presuppositions. They may be summarized as follows: First, industrial concentration is continuously and rapidly increasing in the United States. In this he roughly follows the John Blair-Federal Trade Commission position recently questioned by Adelman, Lintner and Butters.[1] Second, concentration of industry is equivalent to or even underestimates the extent of monopoly about which he is concerned. Therefore, the rate at which monopoly is increasing is alarming. Third, monopoly is the chief cause of our economic maladjustments. To it may be attributed, among other things, both depression and inflation. The excision of monopoly would, then, remedy our chief economic defects. Fourth, the expansive phase of capitalism has ended, and the growth factors that served to divert public attention from the development of monopoly are now ex-

[1] M. A. Adelman, "The Measurement of Industrial Concentration," *Rev. Econ. Stat.*, Nov. 1951, XXXIII, 269-96; Corwin Edwards, George Stocking, Edwin George, and A. A. Berle, Jr., "Four Comments on 'The Measurement of Industrial Concentration'," *ibid.*, May 1952, XXXIV, 156-74; M. A. Adelman, "Rejoinder," *ibid.*, 174-78; John M. Blair, "'The Measurement of Industrial Concentration': A Reply," *ibid.*, Nov. 1952, 343-55; M. A. Adelman, "Rejoinder," *ibid.*, 356-64; John Lintner and J. Keith Butters, "Further Rejoinder," *ibid.*, 364-67.

hausted. Fifth, the continuation of the trend to monopoly would undermine the American faith in free enterprise and political democracy.

Although these are not unfamiliar or perhaps even unpopular propositions, the validity of the first four of them, at least, is highly questionable. Upon these assumptions, whose validity he does not prove, Wells builds his analysis.

As Wells sees it, the central monopoly problem is whether a democracy can, without destroying itself, reverse the tendency of private monopoly to dominate the economic process. To solve that problem we should understand the general question of controlling man's environment. In addition, we should understand the American tradition of controlling the political and social environment, and how that tradition evolved. With these purposes in mind, Wells devotes some thirty pages to a truncated survey of political and social theory from Plato to Marx. He then turns to a brief inquiry into the nature and origins of the American pragmatic tradition. Wells concludes that certain environmental and ethnic factors have permitted in the United States a gradualistic and pragmatic approach to social and economic problems. He feels, however, that a failure to cope with the relentless growth of monopoly would cause a popular rejection of gradualism, and thus produce the contradictions and upheaval Marx predicts.

In Wells' judgment, our present plight is grave but not hopeless. He devotes the better part of 75 pages to a recital of the factors that make the task of antitrust as great as they are. First, the ownership and control of industry are already highly concentrated. And concentration (oligopoly) comes to the same thing as monopoly. Second, there is a lag between the growth of a social threat and an official and public awareness of it. Our institutional apparatus tends, therefore, to lag behind the development of those evils it is supposed to combat. Third, powerful monopolies are able to influence legislation to their own advantage. Fourth, even if appropriate antitrust legislation exists, big business can frustrate its application.

In spite of the enormity of the task facing antitrust agencies, Wells is hopeful. He takes heart in a new public awareness of the problem and in certain recent court decisions (including the Aluminum, Tobacco, Pullman, and Cement Institute cases) that make the task of winning antitrust cases somewhat less formidable.

Whatever one may feel about the need of an antitrust program, and this reviewer believes there is such a need, Wells' study is disappointing. He generally disposes of powerful counterarguments by ignoring rather than refuting them. He carefully explains why oligopolists behave like monopolists, yet disregards factors that may make them behave competitively. He turns his back on the dynamic forces that have in the past made American monopolies unstable, and denies the facts of American economic progress. He does not sufficiently consider the possibility that state-sponsored monopolies may be more dangerous than the private monopolies he abhors. He takes the questionable position that trade unions, the farm bloc, and other pressure groups are free of the unsavory motivations and evil consequences he sees in concentrated business.

From one who argues so strongly for a strengthening of antitrust we might

expect concrete suggestions. Wells, however, contributes practically nothing to the development of a workable antitrust program. The newcomer to economics will find in Wells' book much that is misleading and not much that is stimulating; students of monopoly and social control will find here little that is useful and less that is new.

Even if this book is judged as an attempt to popularize a dogma, it does not come off well. Wells' style is frequently opaque and usually discursive. The book is repetitious and disorganized.

Wendell Berge wrote the lucid but overenthusiastic introduction to the volume.

JOHN S. MCGEE

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Problems of Nationalized Industry. Edited by W. A. ROBSON. (New York: Oxford University Press. 1952. Pp. 390. $5.00.)

This study systematically interrogates the experience of industries and services nationalized by Britain's Labor government between 1945 and 1950. The first half consists of thirteen essays by different authors; six of these essays appeared previously in the *Political Quarterly,* April-June, 1950. In the second half, W. A. Robson, professor of public administration, University of London, synthesizes the various topics and states general conclusions.

The essays do not constitute case studies of particular nationalized industries. Instead, they have the merit of examining the major general issues relevant to most nationalized industries operated by public corporations: the basis of compensation, administrative organization, ministerial control and parliamentary responsibility, labor problems, joint consultation, the consumer's interest, public relations, price policy, financial efficiency, and scientific research. It is apparent that the political issues receive more attention than do the economic. The economic contributions are by Professors Gilbert Walker, G. D. H. Cole, W. A. Lewis, P. Sargant Florence, and Sir Arthur Salter.

Of the economic contributors, Professor Lewis on "Price Policy" and Sir Arthur Salter on the "Crux of Nationalization" provide a balanced combination—the former displaying optimism, the latter pessimism. Undismayed by all the qualifications raised in the many discussions of marginal cost pricing, Lewis proceeds directly to a promulgation of his rules (pp. 181, 190-91): "(1) It [the public corporation] should make neither a loss nor a profit after meeting all capital charges; and (2) the price it charges for different services should correspond to relative costs. . . . And if subsidies or taxes are to be levied, they should be levied only by instruction, should be shown separately in the accounts, and should be paid separately to or by the Exchequer. . . . If the different parts of the service compete with each other, relative prices must reflect (but not necessarily equal) relative marginal costs. And each part of the service should pay its own way, showing neither a profit nor a loss, except where the different parts share the same overhead costs; in this case each

must make a surplus, dependent upon its capacity to contribute to overhead costs."

Sir Arthur Salter, in contrast, is so concerned with three preliminary questions that he will have little to do with the planner's Nirvana: "How can the incentives of competition, with prospective profit or bankruptcy, which are found in private enterprise, be replaced? How can collective bargaining be adjusted to the different conditions of nationalized monopolies? And what safeguards can be found against the inherent tendency of bureaucracy to excessive centralization?"

The economic discussion is in many respects rather dated in the Lange-Lerner-Hayek days. To a considerable extent, one may feel that what would really be of interest in this field is a rewriting in terms of modern welfare economics of Pigou's earlier discussion of "Public Operation of Industries" in his *Economics of Welfare,* followed by an application of principles to the types of problems under review in this study. One especially misses more attention to some issues of marginal cost pricing as analyzed elsewhere by Crosland, Henderson, Little, and Wilson, among others. Some concern with problems of productive efficiency in state monopolies, as discussed elsewhere by Chester and Jewkes, would also have been relevant. It is at best not very satisfying, and at worst meaningless, to dismiss the latter problem merely by claiming that "statisticians are lagging behind the public need in evolving the statistical criteria necessary to determine performance" (p. 297). Even more significantly, investment policies of nationalized industries are neglected. This can not be separated from price policy and deserves attention. And finally, particular problems such as the intricacies of the road-rail and electricity-gas problems are unduly minimized. If, as is maintained, the public corporation is the "most important constitutional innovation which has been evolved in Great Britain during the past fifty years," then the concentration on administrative problems is welcome. Although the reviewer is not competent to evaluate the political contributions, nevertheless he must remark on the number of rather vacuous conclusions such as the following: "A successful balance between decentralization of management and central control of policy rests, in the last resort, on the establishment of harmonious relations between the persons concerned" (p. 90). Or, "My general conclusion on the whole subject (of the governing board of public corporations) is that it is of profound and fundamental importance that the prestige, status and dignity of these posts should be upheld and enhanced" (p. 107).

In general, the same economic problems which this work considers have already been discussed in the literature, in some instances more thoroughly. But students will find it convenient to have the problems bound between two hard covers, rather than scattered among journals and pamphlets. It is, however, regrettable that there has been a publication delay of almost two years for the treatment of materials only five years old. Problems of denationalization may now be just as topical.

G. M. Meier

Williams College

Economic Warfare. By YUAN-LI WU. (New York: Prentice-Hall. 1952. Pp. xii, 403. $4.50.)

In this book Yuan-Li Wu makes a painstaking and conscientious attempt to develop a general theory and present an historical description of economic warfare, the emphasis being heavily on the former.

The seven chapters that follow the introduction present an over-all view of the numerous measures that, in principle, a nation at war can take to strengthen its own economy and weaken that of the enemy. Two chapters cover regulation of international buying and selling. Two others consider "Aggressive and Defensive Financial Controls and Operations," one dealing with foreign asset control, and the other with something called "Foreign Exchange Budgeting Special Exchange Procedures." Another analyzes the long-term economic penetration of a developed economy with which one is not at war. Two chapters, entitled "Economic Cooperation versus the New Colonialism," based largely on U.S. policy following the war, indicate ways in which a country can enhance its international position through conditional aid rather than coercion. Two others describe World War II measures taken by the British and Americans, and make interesting reading, but German countermeasures can only be inferred. Another, on "Economic Warfare Against a Hypothetical Enemy," distills some principles and considers some likely and unlikely alignments. One chapter deals with the aftermath of economic warfare. The final chapter comments on some actual and possible U.S. policies.

Mr. Wu is at his best when outlining the multiple effects—some favorable and some unfavorable—that stem from each act of economic warfare. In framing its wartime regulations over trade and finance, a government must always compromise in its relations with neutrals, because its own bargaining power is very seldom absolute. For example, it will usually be necessary to permit some re-exports through neutrals to the enemy, especially when both neutrals and the enemy are within the effective blockade.

One fact driven home by this work is that, in economic affairs, no neutral will ever be left alone by both belligerent powers. One or other will strive, with bribery and bullying as conditions dictate, to induce neutrals to restrict their exports to hostile powers and enter more wholly into the economic orbit of its own bloc. The means employed may be different for each country depending on a multitude of factors.

It is for this reason that a discussion of economic warfare should run in terms of specifics rather than generalities. How a neutral is to be treated depends on geography, the location and effectiveness of one's blockade, the goods and services the neutral needs, and the exact nature of the commodities to be diverted for the enemy. Does the neutral have a merchant marine dependent on the maintenance facilities of one of the belligerents? Does it normally use one of the warring powers as a banker for its international transactions? What are the political sympathies of each neutral government and people?

A serious defect of *Economic Warfare* is that it attempts to develop a general theory for a subject which does not lend itself to this treatment.

Consequently the text is desiccated and laborious. Each sentence is lucid enough, and the manner of presentation is eminently logical, but the effect of piling one theoretical interaction upon another, until some large abstract monument to deduction has been constructed, is deadening. The occasional footnotes giving some historical instances are the only relief experienced in some very tedious chapters.

For this reason too it is hard to say that this book, which could have been so timely, is particularly relevant to the cold war. True, the principles of economic warfare, developed at such great length, are pertinent enough. But one learns very little, the chapters on "Economic Cooperation versus the New Colonialism" notwithstanding, about the main issues that arise, or might arise, from a determined American and British attempt to influence European and Asiatic trade with the Soviet Union and its satellites. Here was an opportunity that was not adequately developed.

Perhaps one merit of the book is that very little has been written in this field since World War II, although various activities of the last war have been described. If colleges have courses in this subject, *Economic Warfare* should be considered as a text, although the students will find this rather exciting subject unexpectedly dull reading.

STEPHEN ENKE

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The Economics of Defense: A Primer of American Mobilization. By R. V. CLEMENCE. (Harrisburg, Pennsylvania: The Stackpole Company. 1953. Pp. 138.)

This book is intended to acquaint the reader having no previous knowledge of the subject with the basic problems faced by a mobilizing economy. The author points up the two major aspects of mobilizing for defense in a democratic nation. On the one hand, there is the problem of physical production. Manpower and other productive resources must be made available for defense purposes. On the other hand, there is the problem of preparing the citizens of a democracy for the added effort and the sacrifices which are necessary during an extended defense program. The author is primarily concerned with this latter aspect of mobilization. His main objective is to develop an analytical technique which can be used by the reader in evaluating the important policy decisions which must be made throughout a period of mobilization.

As Professor Clemens indicates, "to prepare a democracy for all-out war is a very different matter from similarly preparing a totalitarian dictatorship. . . . Mobilization in a dictatorship means telling people what to do, and making them do it" (p. 2). By contrast, in a democracy, the success of a defense program of indefinite duration depends primarily upon the voluntary cooperation of the various groups within the private sector of the economy; and a familiarity with the basic problems involved will promote more ready acceptance of the program by these groups.

The author has devoted individual chapters to a description of the peace-

time, wartime, and defense economies. The analysis in these chapters is directly related to a series of circular flow diagrams or models which present the real income and the money income relationships between the household, business, and government sectors of the economy. These models effectively illustrate the manner in which money and income flow vary between these sectors as the transition is made from a peacetime to either a defense or a wartime economy. Separate chapters consider two important phases of a mobilization program, namely, the shifting of resources to the defense area of production and the problem of inflation control. Final chapters present an analysis of indirect and direct controls and their rôle in a defense economy.

Perhaps the greatest single merit of this book is its simplicity. No attempt is made to define either the precise composition or the exact size of national output during the period of defense production. The general approach is less detailed and less technical than other works on the subject which have appeared within the past several years. The book is intended to be a primer on the economics of defense. Other more technical treatments are recommended as a sequel.

Mobilizing for defense and war has been a recurring problem in recent years. Few basic economics textbooks, however, give a fully integrated treatment of the subject. Yet the student should be familiar with, and should be able to evaluate critically, the various economic policy decisions which must be made during an extended period of defense production. A careful study of Clemens' "primer" will provide the reader with the analytical tools to better understand the economic implications of these policy decisions. The book is highly recommended for supplementary reading at the elementary level.

GERHARD N. ROSTVOLD

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Public Utilities; Transportation; Communication

The Pacific Coast Maritime Shipping Industry, 1930-1948. Vol. 1, *An Economic Profile*. By WYTZE GORTER and GEORGE H. HILDEBRAND. (Berkeley and Los Angeles: Univ. of California Press. 1952. Pp. xiii, 118. $2.50.)

This is the first of two volumes dealing with the measurement and analysis of the economic performance of the Pacific Coast maritime shipping industry, defined in the opening chapter to include those functionaries which "move waterborne cargo and passengers[1] through ports of the Pacific Coast States in the foreign, intercoastal, coastwise, and non-contiguous trades."

The authors have specifically limited themselves in Volume I to the construction and very limited interpretation of statistical series relating to three

[1] The analysis is confined, however, to cargo movements on the ground that passenger traffic is not significant.

measures of performance: cargo tonnage, as an indicator of output; vessel arrivals, as a measure of service offered; and employment, as a measure of both employment opportunities and the degree of utilization of the rather immobile labor force associated with the industry: the choice being determined in part by the availability of data. The "economic profile" presented by these series is discussed in general terms in the second chapter and more specifically in the two following, but in each instance explanations of and inferences from the data are limited to a defense of the general thesis that the industry was declining, in absolute terms and relative to those of the Gulf and Atlantic Coast ports, throughout the period 1930-1948 except under the stimulus of war. A useful and methodical summary of the problems of data collection and their resolution and the tabular summaries referred to in the text are presented separately in appendices for clarity of exposition.

The organization and presentation of industry studies is, of course, a matter of individual preference, and the well-ordered development of this little book bears out the authors' contention that a very considerable task of data assembly and reconciliation was necessary before any meaningful analysis of causal factors could be undertaken. It is not entirely clear, however, that this fact alone warrants the separate publication of Volume I. The nontechnical reader will find it difficult to apprehend its significance in the absence of a selective description of the nature and recent evolution of the peculiar market environment in which the industry operates; and the professional in the field can hardly assess the adequacy of the measures employed or the validity of the conclusions with respect to the industry's postwar status without a more explicit statement of the coverage and technique of the causal analysis to follow.

In a similar vein, it is to be hoped that the authors' concluding statement that the central theme of the problems to be dealt with in that analysis concerns the concepts of supply and demand implies a broad reading of those terms: *i.e.*, an inclusive examination of the complex political, legal, and sociological relationships which underlie economic behavior on the Pacific Coast waterfront, and of their vital significance to the development—from among a broad range of alternatives—of short- and long-run policies of employer and union groups. The politics of regulation and of trade policy, the ideology behind the drastic revision of waterfront labor organization, and the personal rivalries of the era are difficult to fit neatly into curvilinear analysis, but they are a vital part of the framework within which economic behavior was determined in that turbulent period.

An adequate appraisal of the usefulness of this first volume must, therefore, await the second. Within the limits specified, however, it represents a scholarly and unusually well-ordered summary of one line of attack on the common problem of virtually all industry analysis: the preparation of meaningful measures of economic performance from scattered data of uneven coverage intended for a variety of purposes.

JAMES A. CRUTCHFIELD

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Land Economics; Agricultural Economics; Economic Geography

Resource Conservation: Economics and Policies. By S. V. Ciriacy-Wantrup. (Berkeley: University of California Press. 1952. Pp. x, 395. $6.50.)

The title of this book suggests an ambitious effort and the flyleaf confirms this. Some fourteen years of research by the author, with assistance of such groups as the Social Science Research Council and the Guggenheim Foundation, lie behind this work.

The general organization of the book is an appealing one, being logical and systematic, something not often attained in a work dealing with such an amorphous field. A review of the emergence of the problem of conservation is followed first by a classification of types of resources and then a consideration of the meaning of the term conservation. The next two sections, which occupy some forty per cent of the book, analyze the rôle of the private planning agent in the economics of conservation. Not only are the effects of decisions based upon economic motivation studied, but the institutional influences which operate upon the private planning agent to speed or retard resource use are given extensive consideration.

It is the author's view that what he calls the "optimum state of conservation" in private economics serves as a "construct" about which the forces of economic motivation and institutional influence may be grouped and analyzed. To this end the "optimum" is viewed *ex ante* to enable the economist to study the effects on conservation resulting from the motives and conscious objectives of the planning agent. The "optimum" seen *ex post* is an historical notion which it is felt will be helpful in the appraisal of "habit patterns." This latter term is used to include behavior learned through repetition and imitation rather than by conscious understanding. Having established his "constructs" Ciriacy-Wantrup gives extended treatment to the manner in which the planning agent reacts to or is acted upon by such economic and/or legal influences as: the rate of interest, time preference, income, uncertainty, prices, some aspects of property, credit, taxation, market form, and economic instability. A number of subtle relationships of varied degrees of importance are uncovered.

The final two sections are concerned with the objective, criterion, and implementation of conservation policy for society. With the society, as with the private planner, the objective is an "optimum state of conservation" but in terms of social rather than private economics. Practically, it is recognized that the theoretical "optimums," both private and social, cannot be attained in reality. In most circumstances the practical goal of conservation policy is held to be a step-by-step improvement in the existing state of conservation.

A unique but important case requires further readjustment in policy goals. This is the case of those resources which are ordinarily renewable but which have a critical zone of utilization beyond which depletion becomes irreversible within the realm of economic feasibility. Perhaps the best single illustration of such a resource is soil. The danger resulting from this irreversibility is that it may entail what are called "immoderate losses"—those which may threaten the survival of the community. Such immoderate losses to society are in terms

of narrowing the resource base of the economy and consequently reducing its adaptability and its opportunities for development. Certain social growth is stifled, some other is distorted; social collapse may result if the resource base is continually narrowed.

Irreversibility does not always result from depletion of these resources. However, it is a possibility which a society cannot afford to risk. As a safeguard against this contingency, Ciriacy-Wantrup develops the notion of a "safe minimum standard" to serve as the practical approximation of the optimum state of conservation for society. This "standard" is defined "in terms of conservation practices designed to avoid the critical zone." Since irreversibility is not, for these resources, the certain consequence of depletion, there is a social cost involved in maintaining the safe minimum standard. The cost may be viewed as an insurance premium against social stagnation and inflexibility.

This theory and the concepts developed in it are, perhaps, the most important single contribution of the book. Not only does it serve as a guide for much of the subsequent policy consideration, but it indicates that one group of resources has both special qualities and a strategic economic position, conditions which are a *sine qua non* for special conservation treatment.

Following this analysis, various means of implementing conservation policy are given consideration. This section concerns itself largely with those tools specifically designed for conservation (direct tools), the more general economic forces which may be used having been studied in the section on the private economics of conservation. Although developing in part from the theory just mentioned, it is of minor analytical interest, being in the nature of a thorough survey of the direct tools. This section is less imaginative than earlier parts of the book.

One aspect of the over-all analysis requires comment. The author's definition of conservation is given as the redistribution of use of a resource "in the direction of the future" (p. 51). Following this it is somewhat startling to find (p. 77) the definition of the optimum state of conservation for the private planning agent "as that time distribution of use rates that maximizes the present value of the flow of (expected) net revenues," and a similar definition (p. 230) of the optimum state of conservation for social policy in term of maximizing "social net revenues over time."

In developing these optimum concepts the author has made the decisive an determining factor *value*, an element which is notably absent from his defini tion of conservation. In view of this latter fact, it is not apparent *how*, no for that matter *why*, the maximization of present value (to either the privat planner or society) should be at the same time uniquely the optimum stat *of conservation*. The analysis shows no connection between value and con servation and certainly the definition given for conservation does not.

In moving from one criterion of conservation (time) to another (value the analysis avoids the thorny problems associated with explaining resourc valuation. Yet this is a fundamental aspect of any theory of conservation, fo unless there is something singular about a resource by reason of which societ cannot afford to value it as ordinary economic goods are valued in the marke

special conservation treatment—as distinguished from ordinary economizing—is irrelevant. The penalty this book pays for side-stepping the valuation problem is a loss of some degree of unity of topic and a certain loss of urgency of purpose. One is left with a feeling that the main battle about conservation was over before he picked up the book.

Another less significant observation is worth mentioning. Although the book makes some attempt to consider nonrenewable (stock) resources, its specific coverage of them is slight and the "general" conservation analysis is often too narrow to consider important factors related to their conservation. For example, total ultimate recovery of these resources is assumed at several points in the book to be a fixed stock which is insensitive to price. In fact, both current supply and ultimate recovery of such resources are characteristically functions of price.

Despite these drawbacks the work indicates many new tools for use in conservation policy and the manner in which they affect conservation decisions. The work of the author also results in the development of several new theories explaining resource characteristics and the effect of those characteristics on society. For these reasons the reviewer feels that the work is a distinct contribution to the literature on the economics of conservation.

JOHN C. MURDOCK

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Agricultural Prices. By FREDERICK LUNDY THOMSEN and RICHARD JAY FOOTE. 2nd ed. (New York: McGraw-Hill. 1952. Pp. ix, 509. $6.50.)

There are now three good textbooks on the subject of agricultural prices. F. L. Thomsen, the senior author of the text under review, pioneered in this field with his first edition of *Agricultural Prices* in 1937. The second edition, substantially revised, now competes, however, with Shepherd's *Agricultural Price Analysis* (1947) and Waite and Trelogan's *Agricultural Market Prices* (1951).

The new text is an improvement upon the original. Most chapters have been rewritten and up-to-date material has been included. Part I deals with Price Determination and Discovery, with specific reference to agricultural prices on the wholesale and retail level. This is first a simple presentation of price theory under conditions of perfect and imperfect markets and includes a brief discussion of aggregative price determinants in addition to the conventional demand and supply analysis. Furthermore it describes and analyzes the general behavior of prices over shorter and longer periods of time. Chapter 9 deals with the relation between cash and future prices and has been taken over almost unchanged from the first edition; it still remains a good description of the rôle which the future market plays, or is assumed to play, in agricultural marketing. Chapter 12 describes various price programs of the federal government which have become "one of the most important factors affecting commodity prices." The programs are largely appraised in the light of theoretical considerations of the free market model. Part II is devoted to the problem of handling price data for statistical analyses, for price forecast-

lating price data and of price analyses, such as index numbers, correlation analyses and long-run and short-run price variations. If used in undergraduate classes, these chapters would necessitate spending some time on statistics, in the absence of previous training in that field. Agricultural extension economists and county agents might find valuable material in the chapters dealing with the methods and difficulties of making price forecasts and outlook reports. In Part III, individual commodities and their prices are dealt with in some detail, such as hogs, beef, dairy products, cotton and wool. For each commodity the major demand, supply and other factors which determine prices are explained, and price behavior and analyses are described.

The main value of the book is that it furnishes further detailed material to enable students and others to understand the nature of price problems and price analysis—an understanding which is necessary for explaining and predicting prices, as well as for controlling them.

For those that like to have their economics shot straight from the hip, this book will be very satisfactory. The manner in which the various price problems have been integrated into a structure for which equilibrium theory serves as a basis commands respect. Examination of price problems, such as those encountered in connection with government price programs, is straightforward and technically well presented with a few minor exceptions. For instance, it would have been preferable if Figure 32 (p. 213) relating to the storage problems and showing hypothetical total return curves under conditions of "inelastic demand," had been drawn so as not to leave the impression that the entire range of the demand curve was inelastic.

The appraisal of government price programs by the authors suffers from occasional moralizing which could affect some readers or students in a manner entirely opposite to the one intended. It is one thing to explain and analyze the "forces interfering with the operation of a free economy" in the light of rigorous economics, but another to imply that those that challenge the conclusions of "sound" economics are necessarily "misguided."

One of the conclusions reached by the authors is that "with certain exceptions . . . retail food prices are determined largely under conditions of pure competition," while marketing margins, *i.e.*, prices received by marketing agencies for the service they perform are "rarely determined under conditions of pure competition" (p. 97). For this statement, there is however little evidence in the text. It seems somewhat contradictory in the light of the various types of imperfect competition—enumerated on the following pages—which we find at all levels of trade. Also, the chapter on pricing under imperfect competition fails to bring out pricing problems under monopsonistic situations which exist in the case of many agricultural commodities on the farm level.

Agricultural Prices, besides being an appropriate text for a special course in that field, is useful as complementary reading material for those that use textbooks in marketing which do not emphasize economic theory in relation to marketing problems (including F. L. Thomsen's *Agricultural Marketing*). For general economists, its value lies mainly in the application of economic theory to the analysis of policy problems.

ERNEST FEDER

Labor

Wages Policy under Full Employment. By E. LUNDBERG, R. MEIDNER, G. REHN and K. WICKMAN. Edited and translated by RALPH TURVEY. (London: Wm. Hodge & Co. Ltd 1952. Pp. viii, 88. $1.)

This is a collection of short essays by four Swedish economists on how to manipulate wages so as to permit the reconciliation of full employment with the prevention of inflation. Of the four only Lundberg, by virtue of his *Economics of Expansion* (London, 1937), will be familiar to American readers. Meidner[1] and Rehn are employed by the Swedish central labor organization, but are (or have been) associated with the Stockholm Business Cycle Research Institute, of which Lundberg is chief. Wickman, who has also worked at this institute, is identified, in the editor's two-page foreword, only as "a specialist in welfare economics."

The essays in question were originally published in Swedish; some in the Social Democratic monthly *Tiden* and the others in the professional (economic) journal *Ekonomisk Tidskrift,* between 1948 and 1950. Lundberg opens the book with a brief general discussion of the issues of wage level policy, and this is followed by Meidner's paper, "The Dilemma of Wages Policy under Full Employment." The bulk of the volume consists of Rehn's paper, "The Problem of Stability: An Analysis and Some Proposals"; a critique thereof by Lundberg and a rejoinder by Rehn. Wickman's very short essay concludes the volume.

It seems fairly clear from the discussion that Lundberg's general position is (by American standards) that of a moderate conservative. His critique of Rehn's proposals (designed to prevent inflation without sacrificing full employment) is marked by concern lest resources be misallocated; lest there be "insufficient risk-taking"; lest the "transfer [of] a large part of private saving to the State" involve an undesirable concentration of economic power; etc. He also argues that "it is very possible that some degrees less of full employment, secured by a restrictive credit policy and without price increases, might be more effective in stabilizing wages than increasing prices by indirect taxes."

The other contributors are all Social Democrats; however, their views imply differences of opinion on the correct wage policy to be recommended to the labor movement. Meidner's view, for example, is not too far removed from Lundberg's; he asserts that it is "excess monetary demand which is the real cause of over-payment, affecting both wages and prices." And his solution is to eliminate the "excess monetary demand." He does not state just how much unemployment he would accept in exchange for such elimination, but does indicate repugnance for "a relapse into a society of the insecure pre-war type." Although Meidner does not offer any guidance in how to get "full employment without inflation," his argument is an interesting Swedish expression of a desire to preserve the independence of unions from even a govern-

[1] Rudolf Meidner is the principal economist of the Swedish Labor Federation while Gosta Rehn is a member of his staff.

ment controlled by their allies. He believes that unionism's primary function is the determination of wages through collective bargaining and that failure to exercise this function by *individual* unions would cause "the members' desire for an interest in the organization [to] lag." Hence he disparages any notion of a centrally determined wage policy[2] and rejects the idea that unions should be "responsible" or "reasonable." The vehemence of his position may be surmised from the following: "There is no organization whose very existence is threatened to the same degree by this excess demand as is the trade union movement which must maintain its dominant position in the wage-formation process if it wants to survive."

Meidner's position is essentially that of the Trade Union leaders, anxious to preserve their independence of the government even when it is dominated by the Social Democrats. Rehn, however, is more willing to take the risks of living with Leviathan. Like Meidner, he believes that the unions cannot, for long, act to hold down wages in the presence of excess labor demand without losing their principal *raison d'être* (and membership). But while Meidner does not specify how he would eliminate excess demand, Rehn has an explicit proposal. He argues that full employment, under existing institutional arrangements, generates (unduly) "high profits," which in turn generates the excess demand for labor which (unions or no) puts upward pressure on wages. The crucial link in the chain between full employment and inflationary wage increases is high profits; and it is this link which Rehn proposes to break by a system of *indirect* taxes levied on "gross production" rather than profits. (Direct taxes are rejected because of their adverse effect on incentives.) Government revenues and expenditures are to be balanced at full employment equilibrium; part of the receipts, however, are to be earmarked for investment purposes and these receipts would be invested or sterilized as the exigencies of the situation required. Underemployment would be combatted by using the investment funds to give jobs to the idle and/or to subsidize certain firms incurring losses; inflation would be fought by sterilizing part or all of the revenues earmarked for investment. But in order to curb effectively both inflation and unemployment, the state "must be able to determine and direct the use of an increased share of the total National Income."

In short, Rehn proposes to transfer a part of profits to the state via indirect taxes. The new full employment equilibrium will involve smaller private, and larger public, investment than heretofore. Absence of high profits will, according to Rehn, remove the excess demand for labor that generates wage increases. But what if unions demand "excessive" wage increases anyway,

[2] This impression of Meidner's position is based on his essay as printed in the book. However, through Professor Walter Galenson, I have seen a mimeographed form of this paper (in English). The translation is virtually identical with Turvey's except that in Turvey's version certain important sentences are omitted from the next to last paragraph (p. 28). They include the following remark: "the trade union part of it has to be consolidated—by a further levelling of ungrounded wage differences, by intensified instruction and by a planned agreement policy, which would not exactly mean centralized actions for increased wages but central influence on the claims of the different unions." This remark quite alters Meidner's position as expressed in the book (making it much closer to Rehn's) it would be interesting to know why it was deleted.

relying on the implicit guarantee of full employment to save their members from unemployment? To circumvent this difficulty Rehn proposes a "centrally planned wage policy—on which the trades union movement can reasonably be asked to take responsibility." Such a policy implies that "the central body must support reasonable wage claims and check the less reasonable ones"; this wage policy will aim at equity among different groups of wage earners rather than encouraging each to bargain for all it is able to take. One consequence of this wage policy would be to narrow (interindustry) wage differentials. Rehn would permit small interindustry differentials to exist as a spur to the transfer of labor from less to more profitable industries; however, he does not think that such differentials (or those now existing) are a sufficient incentive for the optimal degree of mobility, and he therefore proposes government financed bounties (administered by labor exchanges) to induce workers to move into certain designated expanding industries.

One obvious difficulty with Rehn's program relates to his assumption that unions will refrain from demanding "inflationary" wage increases in the presence of full employment if there is a transfer of "excess" business profits to the Treasury via indirect taxes. Both Lundberg's critique and Wickman's essay express doubts on this matter, doubts shared by the reviewer. A second difficulty, also noted by Lundberg, is our ignorance of how much government investment (or subsidies) would be required to maintain full employment under Rehn's scheme. The amount could vary enormously depending upon business response to the initiation of the plan. Rehn's rebuttal to these arguments is not, in my opinion, satisfactory: despite the admirable restraint of the Swedish unions in recent years, it is at least debatable that, even in Sweden, this could continue indefinitely. In any event, the matter requires more discussion than Rehn devotes to it. The second difficulty is not really considered at all; at bottom, I suspect, Rehn is not overly worried about "too much" government investment.

On the other hand, Lundberg's position is not a happy one: to argue for credit restriction and "some degrees less of full employment" is to invite Rehn's retort, "less than what?" The cost of price stability in terms of unemployment is simply not known. Rehn's rebuttal further argues that, while his own proposal may not be perfect, it is superior to the mixture of direct controls and exhortation that has characterized much of postwar wage policy in Sweden and elsewhere. And it is not clear that Lundberg would not choose Rehn's proposal rather than continue existing policies. Lundberg's *attitude* is clear; he would like somewhat more stress on curbing inflation and somewhat less on maintaining full employment, but it is by no means easy to translate this *attitude* into a positive *program*.

By and large, these essays are well worth the attention of students of wage policy. They do not take us very far beyond the discussions of English-speaking economists, but there are certain differences of emphasis that justify a reading. It is unfortunate that the editor did not provide an introductory essay on the political and economic situation that gave rise to the debate and a description of the relevant Swedish institutions. It is only inferentially that

the phenomenon of the "wage stops" (freezes) in Sweden enter the discussion; yet these are basic to any understanding of the practical bearing of the argument. Again, the background of the "solidaristic" wage policy that has (over the past two decades) narrowed wage differentials, and upon whose acceptance Rehn's proposal rests, is not considered. An explanation of such phenomena as these would have added greatly to the value of the book. But beggars cannot be choosers and, as it is, Turvey has left us in his debt.

M. W. Reder

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Sidney Hillman, Statesman of Labor. By Matthew Josephson. (New York: Doubleday and Co. 1952. Pp. 701. $5.00.)

Matthew Josephson's biography of Sidney Hillman could hardly fail to be an interesting and absorbing study. The man, the union he represented, their joint rôle in the growth of the American labor movement, are such vital parts of our recent history that attention is inevitably drawn to what Josephson has to say. But oddly enough, although one's interest is maintained throughout the study, this reader was left disappointed. Despite Josephson's generally recognized skill as a writer, the personality of Hillman fails to emerge in convincing fashion. We are told repeatedly that Hillman was a great labor leader and statesman, but still the reader is left with the feeling that adequate demonstration is lacking. After nearly 700 pages of text Hillman remains a largely unknown character—Josephson's adulation notwithstanding. It is hard to account for this failure. Although Hillman left few personal records, a considerable number of people who knew him well (including his wife) were available to the biographer. Many, indeed, are quoted in their appraisal of Hillman—with some bias towards those who admired him most—while less attention is paid to Hillman's critics, most notably David Dubinsky.

The biography follows a rather straightforward chronological pattern starting with a brief account of Hillman's youth in Russia where he participated in the revolutionary movement. His changeover from a revolutionary to a moderate trade union leader after his immigration in 1907 is certainly not adequately explained by Josephson. The best told parts of the story cover the turbulent years from 1910 when Hillman first joined the United Garment Workers Union, after working for a relatively short time as a cutter in Chicago, until 1914 when, at the age of 27, he became president of the new Amalgamated Clothing Workers Union. But even this part of the history cannot be accepted uncritically. One of the great difficulties faced by a biographer is to resist the temptation to let the hero steal the show. Josephson does not entirely succeed. So in the early years the parts played by such workers as Joseph Schlossberg, Hyman Blumberg, August Bellanca and Bessie Abramowitz (later Mrs. Hillman) receive a smaller share of the spot-light then they deserve. And some will question whether Hillman would have risen to the leadership of the union without the active sponsorship of such off-scene workers as the arbitrator John E. Williams, the social worker Jane Addams and the lawyer Clarence Darrow. Similarly, in the later period, as during the

formation of the CIO, the rôle of John L. Lewis is certainly underplayed.

For the economist the omissions that will be most noticed concern the changing economic status of the clothing workers. Since World War I, the Amalgamated Clothing Workers Union in varying degree has exercised considerable influence, through unionization, in the men's outerwear industry. There is no attempt made by Josephson to follow up in any systematic fashion the consequences of unionization in such important areas as wages, employment or migration of the industry. Much attention is paid to strikes and to the extention of union control and mention is made of the union's efforts to aid the industry along the lines of "scientific management." But in fact the reader will learn more about such fringe issues as the Amalgamated Bank and cooperative housing sponsored by the ACWU than he will about what actually happened to the workers in the industry. To cite one example, in 1923 about 63 per cent of all employment in the men's outerwear industry in the United States was found in six cities, where the union had its greatest control (although the degree of unionization was not equal in all these cities). By 1937 the comparable figure had fallen to 49 per cent, a decline of 14 percentage points. In Chicago alone, the original stronghold of the union, the employment percentage fell from 18 to 8 per cent of the national total between 1923 and 1937. Josephson makes no attempt to set forth these important developments, which are well known and uncontested facts; and consequently he fails to probe into some of the most vital problems of the industry which fostered Sidney Hillman and which was, in turn, molded in a significant fashion by him.

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AFL Attitudes Toward Production, 1900-1932. By JEAN TREPP MCKELVEY. Cornell Studies in Industrial and Labor Relations. Vol. II. (Ithaca: Cornell Univ. Press. 1952. Pp. ix, 148.)

This volume represents the interpretative part of a doctoral dissertation on union-management cooperation written by the author two decades ago at Radcliffe College. The dissertation material describing actual cases of cooperation, since then covered by other writers, has been omitted from the publication.

Professor McKelvey's interpretation of the development of a "cooperating philosophy" by the American Federation of Labor during the period in question is essentially this: The weakness of the labor movement, stemming from various socio-economic conditions, prompted union initiation of cooperating ventures as a technique for the survival and growth of trade-unionism. In her own words:

> . . . the difficulties involved both in overcoming the apathy of the workers and in forcing recognition from employers suggested that the easier road to organization lay in selling the union to employers by persuading them that their own self interest could best be promoted through union recognition, that the trade union alone, in contradistinction to the com-

> pany union or other forms of employee representation, could supply the broad basis of confidence necessary to release the full productive energies of the workers (p. 119).

But this cooperating "philosophy" did not emerge automatically. Quite the contrary,

> . . . leadership is necessary to analyze a new industrial situation and to formulate a program for dealing with it. Leadership is also essential in educating the rank and file to acceptance of policies which involve a departure from long established procedures. So far as the AFL is concerned, there is little doubt that William Green was the person chiefly responsible for its support of union-management cooperation (p. 120).

The author emphasizes, however, that the cooperating technique failed to attain the objectives of organized labor.

Union-management cooperation designed to increase productivity—which is the sense in which the author uses the term—is characterized (among other things) by a spotty growth pattern: At any given time it will exist in some bargaining units (or subdivisions thereof) and not in others; and it does not continue indefinitely in those units where it emerges. Given this fact, it is neither realistically constructive nor analytically accurate to deal with the problem of cooperation by pitching the approach at the level of the entire economy and focusing on federation leadership, as did Professor McKelvey. Instead, the investigation must be oriented toward the particular business units where the cooperating ventures are being tried and toward the labor leadership relevant to those units. In some instances this may mean focusing on the "philosophy" of an obscure local official, in others on a national labor figure, in still others on a regional director, etc. And such a research dictate is reinforced by the fact that the component national unions of the AFL are nigh-perfect autonomous bodies when it comes to elaborating and executing collective bargaining policies. Nor should one fail to note that within many of these nationals, some or all of the locals themselves have a great deal of autonomy where job problems are concerned.

All this is not to imply, of course, that the "philosophy" of the AFL leadership is of absolutely no importance for the success or failure of union-management cooperation experiments, either during the period studied by the author or a different time span. But compared to the other forces impinging on the national, and particularly the local, union officials in America, the impact of so-called Federation viewpoints and attitudes is relatively negligible.

This reviewer is not asserting that by any stretch of the imagination is adequate local or national union leadership enough for the successful emergence and continuation of union-management cooperation plans. There are various other conditions that must be fulfilled. But to ascertain *concretely and operationally* what these conditions are, the researcher must concentrate his investigations on the relevant business units. That again points up the fact that to deal with the cooperation problem at the level of the entire economy, which the author has done in this volume, is of relatively little practical value. It may well be, of course, that in her doctoral dissertation she did make

exhaustive case studies of the particular plans that were initiated during the 'twenties. But if so, her analysis and interpretation in this volume should have focused on these particularities.

This reviewer has evaluated the study from the vantage point of a "pragmatist" (in the philosophical sense). That in no way, however, implies a similar evaluation of Professor McKelvey's effort in the light of other criteria. For instance, as a chapter on the "intellectual" development of certain segments of the AFL leadership during the 'twenties, this monograph might well prove a noteworthy document. And the reader should also keep in mind that the study was completed twenty years ago, when the techniques and insights now commonplace were unavailable.

JOSEPH SHISTER

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The Organizability of Farm Labor in the United States. By ALEXANDER MORIN. (Cambridge: Harvard University Press. 1952. Pp. 102. 50 c.)

For many years the problems and difficulties of organizing field workers in agriculture have been known. But the author is perfectly right when he states that "there has been little or no systematic analysis of the specific problem of the organizability of the farm wage worker." To fill this void is the object of this monograph.

The central observations of the study may be summarized as follows: the problem of union organization in agriculture, as compared with industry, is more complex than are suggested by the purely economic and operational factors of organizability; in contrast to industry, the psychological barriers to successful unionism in agriculture (farm worker identification "with farm-owning or with non-agricultural groups") are more formidable; the hope of escaping from wage employment in agriculture overrides the typical worker's concern about conditions on the job, and hence "the remedial efforts of farm worker trade unions" are of secondary importance; and joining a union of his fellow farm workers is not the path pointing to his long-term aspirations.

A glance into the past makes it difficult to confute these observations. And a look at the present does not raise doubts as to their general validity, but it does raise the question: How really crucial or significant are these difficulties when it comes to organizing hired farm workers into stable unions? Although it is true, as Mr. Morin states, that "a recognition of permanence in farm work will contribute to future organizing campaigns," too much may be made of this point. What must not be lost sight of is the fact that at least two million workers try to make a living mostly from wage employment in agriculture every year. And this suggests a sizeable gross organizable potential for many years to come. With organizational perspectives trained on the short rather than on the long occupational horizons of agricultural hired workers, it is conceivable that appropriate techniques can be devised to meet the organizational problem of excessive occupational turnover among these workers.

As for the economic and operational factors affecting union organization in

agriculture, none is more important than the character of the farm labor market itself. In this respect, Morin does a very creditable job, particularly in describing the labor supply aspects of this market. Because easy entrance into seasonal farm work tends to undermine the employment opportunities of those workers more or less permanently attached to agriculture, it is both a principal incentive and a major difficulty in their organization. Not mentioned, however, is that one of the most important factors in preventing unionization of large-scale agriculture in the Southwest, for example, is the current legal and illegal employment of Mexican nationals.

At one point Morin states that "dispersion [of employment] is no doubt one of the principal reasons for the failure of hired farm workers to organize into unions." This largely begs the question. Union policies and practices have not embraced the nation as a whole, but only those areas characterized by employment of comparatively large numbers of workers per farm establishment. One wonders whether, in the final analysis, the psychological and operational problems associated with organizing farm laborers are so tough or so unique that they could not be overcome by a resourceful and determined leadership having a budget of, say, one-half million dollars a year for a minimum of five years for organizational work in the most concentrated areas of farm employment. There is no question but that this budget would have to be underwritten largely by unions operating in urban or semi-urban occupations.

Although this study has the limitations to be expected of any first effort at a systematic analysis of the problem, it is a contribution to the understanding of why the last major unorganized sector of our economy has not been unionized.

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Population; Social Welfare and Living Standards

Consumer Problems. By Aach W. Troelstrup. (New York: McGraw-Hill. 1952. Pp. xv, 458. $4.75.)

This book is intended to be a practical aid for people setting up housekeeping. It is doubtful that Professor Troelstrup intended the book to add anything new to the science of economics or to sociology. The foreword states that the book was developed in a consumer problems course at Stephens College.

There are many students, however, who either are, or think they are, too sophisticated for the style of this book. Students at a large urban university, for example, may consider that it has been "written down" to them. At some colleges elementary economics is a prerequisite for the consumer economics course and this book is not advanced enough for such a course.

Consumer Problems cannot be classified as a book in the economics of

consumption, or family finance, or marriage and the family. It cuts across all three fields. Most consumer texts, such as those by Coles, Reid, Waite and Cassady, Hoyt, Vaile and Canoyer, Campbell, or Gordon try to use the problem approach as a springboard to deal with issues of broader significance. Such texts relate shopping to the problem of making consumer demand effective in the market. Budgeting is subordinated to a study of income and expenditures, national and average rather than imaginary and personal. Troelstrup, in contrast, quotes the Heller Committee budgets for San Francisco families of four persons (an executive with a budget of $12,849.24 before rent; a white collar worker with $5,208.47 excluding housing; a wage earner, $4,111.22) without indicating to what families these budgets may be applied except for the information contained in the budget titles. The U. S. Bureau of Labor Statistics budget for a city worker's family of four persons (1947) is given but there is no discussion of the incomes of city workers' families.

A few examples may show the kind of useful information which the book contains. The chapter on food shopping has good material on grades similar to that in Coles' *Standards and Labels for Consumers' Goods* (1949). The chapter on savings, also, has an intelligent discussion of insurance. It implies, however, that financial security can be achieved by good savings and insurance programs. It seems almost useless to teach the student to plan his personal financial life so carefully without stressing the limits to this kind of planning. Much that will happen to the student financially will depend upon the economy as a whole—the stage of the business cycle, peace or war, the kind of taxes levied, the relative distribution of income, the general level of prices, and the relative levels of different prices. Subject to these developments the individual may labor to balance his budget and achieve financial security.

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TITLES OF NEW BOOKS

Economic Theory; General Economics

BAIN, J. S. *Pricing, distribution and employment: economics of an enterprise system.* Rev. ed. (New York: Henry Holt. 1953. Pp. xvii, 732. $6.50.)

The revised edition includes "a more comprehensive chapter on demand (including added material on the theory of consumer choice)," more attention to the "welfare impacts of competitive and monopolistic pricing," a substantially rewritten treatment of oligopolistic pricing, and a new chapter on the theory of price discrimination. "The conventional theory of income distribution, as developed on certain simple equilibrium assumptions, is now presented without interruption in the three chapters following the section on price theory, while the theory of income and employment, together with an analysis of interest and other distributive shares under nonstationary conditions, follow."

BELL, J. F. *A history of economic thought.* (New York: Ronald Press. 1953. Pp. x, 696. $6.50.)

BURNS, A. E., NEAL, A. C. and WATSON, D. S. *Modern economics.* 2nd ed. (New York: Harcourt, Brace. 1953. Pp. xi, 813. $5.75.)

BRAEUER, W. *Handbuch zur Geschichte der Volkswirtschaftslehre.* (Frankfurt am Main: Vittorio Klostermann. 1952. Pp. 224.)

CANNAN, E. *A history of the theories of production and distribution from 1776 to 1848.* 3rd ed. A reprint. (New York: Staples Press. 1953. Pp. xi, 336. $4.25.)

DAHL, R. A. and LINDBLOM, C. E. *Politics, economics and welfare: planning and politico-economic systems resolved into basic social processes.* (New York: Harper & Bros. 1953. Pp. xxvi, 557. $5.)

HANSEN, A. H. *A guide to Keynes.* Econ. handbook ser. (New York: McGraw-Hill. 1953. Pp. xiv, 237. $3.75.)

HARRISS, C. L. *The American economy: principles, practices and policies.* (Homewood, Ill.: Richard D. Irwin. 1953. Pp. xvii, 1120. $6.)

HARTOG, F. *Problemen der moderne economische politiek.* Capita Selecta der Economie vol. XVI. (Leiden: H. E. Stengert Kroese N. V. 1953. Pp. x, 204. *f* 9.75.)

OXENFELDT, A. R. *Economics for the citizen.* (New York: Rinehart. 1953. Pp. xxii, 746. $6.)

RIEDLE, H. *Hermann Heinrich Gossen, 1810-1858: Ein Wegbereiter der modernen ökonomischen Theorie.* (Winterthur, Switz.: P. J. Keller. 1953. Pp. ix, 137. Sw.fr. 12.—.)

SCHÜMPETER, J. A. *Aufsätze zur Okonomischen Theorie.* (Tubingen: J. C. B. Mohr. 1952. Pp. 608. DM.38.50.)

STEINDL, J. *Maturity and stagnation in American capitalism.* Oxford Univ. Inst. of Stat. monog. no. 4. (Oxford: Basil Blackwell. 1952. Pp. ix, 248. 30*s*. New York: Augustus M. Kelley. $4.50.)

UPGREN, A. and EDMUNDS, S. *Economics for you and me.* (New York: Macmillan. 1953. Pp. viii, 246. $4.)

An informal and readable presentation of elementary economics for the general reader.

VON MISES, L. *The theory of money and credit.* New ed. enlarged with an essay on monetary reconstruction. (New Haven: Yale University Press. 1953. Pp. 493. $5.)

WAGNER, V. F. and MARBACH, F., eds. *Wirtschaftstheorie und Wirtschaftspolitik—Festschrift für Alfred Amonn.* (Bern: A. Francke. 1953. Pp. 371.)

WORCESTER, D. A. *Fundamentals of political economy.* (New York: Ronald Press. 1953. Pp. xv, 594. $4.50.)

Economic History; National Economies; Economic Development

BADEAU, J. S. and NOLTE, R. H. *The emergence of modern Egypt.* Headline ser. no. 98. (New York: Foreign Policy Assoc. 1953 Pp. 62. 35¢.)

BERGSON, A., ed. *Soviet economic growth.* (Evanston: Row, Peterson and Co. 1953. Pp. viii, 376.)

A symposium by various authors who participated in a conference at Arden House, organized under the sponsorship of the Joint Committee on Slavic Studies of the American Council of Learned Societies and the Social Science Research Council.

———. *Soviet national income and product in 1937.* (New York: Columbia Univ. Press. 1953. Pp. viii, 156. $3.75.)

BOURDE, A. J. *The influence of England on the French agronomes 1750-1789.* Cambridge stud. in econ. hist., M. M. Postan, gen. ed. (New York: Cambridge Univ. Press. 1953. Pp. xi, 149. $6.)

CLOW, A. and CLOW, N. L. *The chemical revolution—a contribution to social technology.* (London: The Batchworth Press. New York: British Book Centre. 1953. Pp. xvi, 680. $10.)

A study of the evolution of the chemical industry from the point of view of the part it has played in the Industrial Revolution. The period receiving primary attention is from 1750 to 1830; and the region stressed is Scotland and northern England.

DE NEUMAN, A. M. *The economic aspects of nationalisation in Great Britain.* (Cambridge: Students' Bookshop. 1952. Pp. 52. 8*s.*, 6*d.*)

DEÓ, P. C. B. *Financial position of the government of India: how decay has set in.* (Delhi: New Publishers. 1953. Pp. 44. R 1/.)

GOODALL, M. R. *Administration and planning for economic development.* Three lectures. (Delhi: Ranjit. Cambridge: Students' Bookshop. 1952. Pp. 61. 3*s.*, 6*d.*)

HEISSENBERGER, F. *The economic reconstruction of Austria 1945-1952.* (Washington: Library of Congress. 1953. Pp. xii, 153. $1.)

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LUBELL, H. *The French investment program; a defense of the Monnet Plan.* (Paris: Mutual Security Agency Special Mission to France. 1952. Pp. 226.)

MAYER, K. B. *Economic development and population growth in Rhode Island.* Brown Univ. papers XXVIII. (Providence: Brown University. 1953. Pp. 70. $2.25.)

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NEMSCHAK, F. *Österreichs Wirtschaft im Übergang von der Stabilisierung zur Expansion.* (Vienna: Osterreichisches Institut für Wirtschaftsforschung. 1953. Pp. 26.)

RAISTRICK, A. *Dynasty of ironfounders: the Darbys and Coalbrookdale.* (New York: Longmans, Green. 1953. Pp. xvi, 308. $8.50.)

The story of a business concern from the time of its founding, at the end of the 17th century, to the present.

SCHLOTE, W. *British overseas trade from 1700 to the 1930's.* Trans. from the German by W. H. Chaloner and W. O. Henderson. (New York: Macmillan. 1953. Oxford: Basil Blackwell. 1952. Pp. xvi, 181. $4.50.)

The German edition of this work appeared in 1938. The editor of that edition said in his introduction that the book "aims at tracing the development of British overseas trade and its changes within as long a period as possible." The book falls into two parts: "The first deals with the sources and methods of the research and tabulates the results. The second part (based upon the evaluation of the statistical material) shows structural economic changes by analysing the growth of overseas trade. These changes have affected both the composition of the goods entering into overseas trade and also the geographical complexity of British overseas trade during the last 120 years."

SHEPARD, W. F. *Price control and the reign of terror: France, 1793-1795.* History pub. vol. 45. (Berkeley and Los Angeles: Univ. of Calif. Press. 1953. Pp. 139.)

SITTERSON, J. C. *Sugar country: the cane sugar industry in the South, 1753-1950.* (Lexington: Univ. of Kentucky Press. 1953. Pp. ix, 414. $6.)

STAMP, L. D. *Africa: a study in tropical development.* (New York: John Wiley & Sons. London: Chapman & Hall. 1953. Pp. vii, 568. $8.50.)

THAYER, P. W., ed. *Southeast Asia in the coming world.* (Baltimore: Johns Hopkins Press. Pp. xii, 306. $4.75.)

The book includes essays on political, economic, cultural, and legal aspects of the problems of the region. The economic essays are by Claude A. Buss, Charles J. Shohan, Frederick T. Koyle, E. H. G. Dobby, and Vu Qüoc Thong, and constitute about one-fifth of the book.

TREVOR-ROPER, H. R. *The gentry, 1540-1640.* Econ. Hist. Rev. suppl. (New York: Cambridge Univ. Press, for the Economic History Society. 1953. Pp. 55. $1.)

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Statistics and Econometrics

COCHRAN, W. G. *Sampling techniques.* (New York: John Wiley. 1953. Pp. xiv, 330. $6.50.)

GOEDICKE, V. *Introduction to the theory of statistics.* (New York: Harper & Bros. 1953. Pp. xii, 286.)

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HOOD, W. C. and KOOPMANS, T. C., eds. *Studies in econometric method.* Cowles Commission monog. no. 14. (New York: John Wiley. 1953. Pp. xix, 323. $5.50.)

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ALLAIS, M. *La gestion des houillères nationalisées et la théorie économique.* (Paris: Centre d'Etudes Econométriques. 1953. Pp. 126.)

BOWEN, E. R. *The cooperative road to abundance—the alternative to monopolism and communism.* (New York: Henry Schuman. 1953. Pp. xiii, 169. $3.)

EBERDT, M. L. and SCHNEPP, G. *Industrialism and the Popes.* (New York: P. J. Kenedy. 1953. Pp. xxii, 245. $3.50).

A study of the Industry Council Plan of social reorganization, and of papal statements with regard to it.

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NOTES

SIXTY-SIXTH ANNUAL MEETING OF THE AMERICAN ECONOMIC ASSOCIATION

Hotel Statler, Washington, D.C., December 28-30, 1953

Preliminary Announcement of the Program

All the sessions of the program deal in some way with the changing structure an functioning of the American economy. Most of the sessions are concerned also with th problem: What are the economic principles which characterize the behavior of an econom of large-scale business units, large labor unions and a considerable degree of goverr mental intervention and control, but with old and new forms of competition neverthele playing a strategic role?

Monday, December 28

10:00 A.M. Meeting of the Executive Committee
12:00 M. Luncheon Meeting of the Executive Committee
2:30 P.M. FUNDAMENTAL CHARACTERISTICS OF THE AMERICAN ECON OMY: DEGREES OF COMPETITION, OF MONOPOLY AND O COUNTERVAILING POWER: THEORETICAL SIGNIFICANCE

Chairman: EDWARD H. CHAMBERLIN, Harvard University
Papers: Countervailing Power, A Moderate Defense of a Modest Innovatio
J. K. GALBRAITH, Harvard University
The Economist Plays With Blocs
GEORGE J. STIGLER, Columbia University
Competitive Processes in the American Economy
JOHN P. MILLER, Yale University
Discussion: DAVID MCCORD WRIGHT, University of Virginia

AN APPRAISAL OF ECONOMIC CHANGE

Chairman: MILTON S. HEATH, University of North Carolina
Papers: Twentieth Century Entrepreneurship: An Appraisal of Econom Change
ARTHUR H. COLE, Harvard University
The Changing Structure of Market Competition
ROSS M. ROBERTSON, Federal Reserve Bank of St. Louis
Discussion: FRANK H. KNIGHT, University of Chicago
ANDREAS PAPANDREOU, University of Minnesota

INSTITUTIONAL ASPECTS OF SAVING AND INVESTMENT

Chairman: LESTER V. CHANDLER, Princeton University
Papers: The Structure of the Market and the Price of Money
WALTER A. MORTON, University of Wisconsin
The Institutional Saving-Investment Process and Current Econom Theory
JAMES J. O'LEARY, Life Insurance Association of America
Monetary Policy and the Structure of Debt
E. S. SHAW, Stanford University
Discussion: SUSAN S. BURR, Board of Governors of the Federal Reser System

8:30 P.M. FACTOR MARKETS VS. PRODUCT MARKETS; IS THE AMERICAN ECONOMY MORE COMPETITIVE IN THE LONG RUN THAN IN THE SHORT RUN?

Chairman: KENNETH E. BOULDING, University of Michigan

Papers: Monopolistic Forms and Competitive Accomplishments
G. WARREN NUTTER, Yale University
Resource Allocation in the United States
ARNOLD C. HARBERGER, University of Chicago

Discussion: SYDNEY ALEXANDER, Columbia Broadcasting Company
RUTH P. MACK, National Bureau of Economic Research
JOE S. BAIN, University of California

DIMINISHING INEQUALITY IN PERSONAL INCOME DISTRIBUTION; RELATION TO FUNCTIONAL DISTRIBUTION AND FACTOR COMPENSATION

Chairman: WASSILY LEONTIEF, Harvard University

Papers: Economic Implications of the Declining Inequality in Income Distribution
GEORGE GARVY, Federal Reserve Bank of New York
On the Process of Income Distribution
ROBERT M. SOLOW, Massachusetts Institute of Technology

Discussion: ALLAN M. CARTTER, Duke University
SELMA F. GOLDSMITH, Department of Commerce

TECHNOLOGICAL PROGRESS AND ECONOMIC INSTITUTIONS

Chairman: ROBERT CALKINS, The Brookings Institution

Papers: The Conditions of American Technological Progress
IRVING H. SIEGEL, Twentieth Century Fund
Innovations and the Size of the Firm
W. RUPERT MACLAURIN, Massachusetts Institute of Technology

Discussion: WALTER ADAMS, Michigan State College
HANS BREMS, University of California
VINCENT F. BOLAND, JR., University of Arizona

Tuesday, December 29

9:30 A.M. INDUSTRIAL PRICING; INSTITUTIONAL PRACTICES VS. ABSTRACT MODELS

Chairman: EDWARD S. MASON, Harvard University

Papers: A Theory of Industrial Markets and Prices
RICHARD B. HEFLEBOWER, Northwestern University
Concepts of Value Theory: Their Operational Significance and Validity
RICHARD RUGGLES, Yale University

Discussion: JESSE MARKHAM, Vanderbilt University
VERNON MUND, University of Washington
HENRY M. OLIVER, Indiana University

FARM PRICES AND FARM INCOMES IN AMERICAN AGRICULTURE: IS AMERICAN AGRICULTURE STILL ESSENTIALLY COMPETITIVE AND LAISSEZ-FAIRE? (Joint Session with American Farm Economic Association)

Chairman: WILLIAM NICHOLLS, Vanderbilt University

Papers: The Impact of Government Programs on Farm Incomes
M. R. BENEDICT, University of California
Competition In Agriculture: Fact or Fiction
GALE JOHNSON, University of Chicago

Discussion: O. V. WELLS, Department of Agriculture
GLEN L. JOHNSON, Michigan State College

WAGE DETERMINATION IN THE AMERICAN ECONOMY; POTENTIALITIES AND LIMITATIONS IN THE USE OF COLLECTIVE ECONOMIC POWER IN VARYING THE COMPENSATION OF LABOR AND CAPITAL

Chairman: John T. Dunlop, Harvard University
Papers: Collective Bargaining and Distributive Shares
CLARK KERR, University of California
The Incidence of Collective Bargaining
MARTIN BRONFENBRENNER, University of Wisconsin
Collective Bargaining and Income Distribution
HAROLD M. LEVINSON, University of Michigan
Discussion: JOHN P. TROXELL, Stanford University

12:30 P.M. LUNCHEON MEETING: Joint session with the American Finance Association
Speaker: W. Randolph Burgess, Treasury Department

2:30 P.M. ALTERNATIVE POSSIBILITIES OF INFLATIONARY PRESSURES AND HIGHER COST BOTTLENECKS IN AN ECONOMY OF LARGE BARGAINING UNITS AND OF LESS THAN PURE AND PERFECT COMPETITION IN THE MARKETING OF PRODUCTS

Chairman: To be announced
Papers: Are Wage Fixing Arrangements in the American Labor Market Inflationary?
SUMNER SLICHTER, Harvard University
C. L. CHRISTENSON, Indiana University
Discussion: ALBERT REES, University of Chicago
CLARENCE E. AYRES, University of Texas
LORIE TARSHIS, Stanford University

THE ROLE OF CORPORATE TAXATION IN THE AMERICAN ECONOMY

Chairman: ROY BLOUGH, United Nations
Papers: The Corporation and Corporate Taxation in the American Economy
GERHARD COLM, National Planning Association
The Corporation Income Tax and Management Decisions (Joint Paper)
KEITH BUTTERS and JOHN LINTNER, Harvard University
Discussion: B. U. RATCHFORD, Duke University
MABEL NEWCOMER, Vassar College

NATIONAL TRANSPORTATION POLICY

(This session is being arranged by E. W. Clemens, University of Maryland, for the Transportation Group)
Chairman: To be announced
Papers: Regulatory Standards for a Sound Transportation Policy
CHARLES L. DEARING, The Brookings Institution
Promotional Standards for a Sound Transportation Policy
SIDNEY L. MILLER, University of Pittsburgh
Discussion: GEORGE P. BAKER, Harvard University
LIONEL W. THATCHER, University of Wisconsin

INDUSTRIAL CONCENTRATION: Joint Session with American Statistical Association •

8:30 P.M. PRESIDENTIAL ADDRESS: ECONOMIC IMPLICATIONS OF INSTITUTIONAL CHANGES IN THE ECONOMY

CALVIN B. HOOVER, Duke University
Chairman: To be announced

Wednesday, December 30

ECONOMIC DOCTRINES IMPLIED IN THE REPORTS OF THE UNITED NATIONS AND OF THE INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT ON UNDERDEVELOPED COUNTRIES

Chairman: PAUL T. ELLSWORTH, University of Wisconsin
Papers: Economic Doctrines Reflected in United Nations Reports
RAYMOND F. MIKESELL, University of Virginia
Economic Development; Theory and Practice à la I.B.R.D.
JOSEPH J. SPENGLER
Discussion: WILFRED MALENBAUM, Massachusetts Institute of Technology
THEO SURANYI-UNGER, Syracuse University

REGIONAL WAGE DIFFERENTIALS IN AN ECONOMY OF LARGE BARGAINING UNITS AND LESS THAN PURE AND PERFECT COMPETITION IN THE MARKETING OF PRODUCTS

Chairman: H. GORDON HAYES, Tulane University
Papers: Interregional Competition
SEYMOUR E. HARRIS, Harvard University
Geographical Wage Differentials and the Public Interest
JOHN V. VAN SICKLE, Wabash College
Discussion: WALTER ISARD, Harvard University
J. FRED HOLLY, University of Tennessee
LOUIS B. PERRY, Pomona College

THE AUTOMATICITY OF FULL EMPLOYMENT UNDER THE ASSUMPTION OF DIMINISHED DEFENSE EXPENDITURES

Chairman: To be announced.
Papers: Means Available for Checking and Reversing a Business Recession
ALBERT G. HART, Columbia University
Changes in Defense Expenditures and the Problem of Deflation: Some Possibilities and Methods of Control
GEORGE H. HILDEBRAND, University of California
Full Production or Under-Utilization: Appraisal of Long-Run Factors Other Than Defense
WILLIAM FELLNER, Yale University
Discussion: CLARENCE PHILBROOK, University of North Carolina
KENNETH D. ROOSE, Oberlin College

2:30 P.M. CORPORATE INTERNATIONAL INVESTMENT POLICIES AND PROGRAMS

Chairman: J. B. CONDLIFFE, University of California
Papers: Corporate Direct Investment Abroad Versus Portfolio Lending
AUGUST MAFFRY, Irving Trust Company
FRANCIS MCINTYRE, California-Texas Oil Co. Ltd.
Discussion: VINCENT W. BLADEN, University of Toronto
H. J. DERNBERG, Federal Reserve Bank of New York

ECONOMIC AND REGULATORY PROBLEMS OF THE BROADCASTING INDUSTRY

(Program arranged by E. W. Clemens, University of Maryland, for the Public Utilities Group)

Chairman: To be announced
Papers: Current Economic and Regulatory Problems of the American Radio and Television Industries
H. H. GOLDIN, Federal Communications Commission

The Development of British Television Service
RONALD H. COASE, University of Buffalo
Discussion: SIDNEY S. ALEXANDER, Columbia Broadcasting System
PETER O. STEINER, University of California

THE THEORY OF INTERNATIONAL TRADE IN A WORLD OF TRAD] BARRIERS AND CONTROLS AND OF VARIEGATED NATIONA] ECONOMIC SYSTEMS
Chairman: JOHN H. WILLIAMS, Federal Reserve Bank of New York
Papers: The Relevance of Classical Theory Under Modern Condition
GOTTFRIED HABERLER, Harvard University
Forces of Disequilibrium in International Trade
DON HUMPHREY, Duke University
Discussion: JOHN H. ADLER, International Bank for Reconstruction and De velopment
RICHARD M. BISSELL, JR., Massachusetts Institute of Technolog
G. A. ELLIOTT, University of Toronto

5:00 P.M. Business Meeting
6:00 P.M. Dinner—Executive Committee
8:30 P.M. GROWTH DECISIONS IN THE AMERICAN ECONOMY
Chairman: To be announced
Papers: To be announced
EDGAR M. HOOVER
Collective Bargaining and Economic Growth
JOSEPH SHISTER, University of Buffalo
Discussion: To be announced

ECONOMICS IN GENERAL EDUCATION—Round Table
Chairman: BEN W. LEWIS, Oberlin College

Participants:
S. P. MCCUTCHEON, New York University
CLARK ALLEN, Florida State College
E. T. WEILER, Purdue University

ECONOMIC IMPLICATIONS OF AN AGING POPULATION
(This session will consist of a progress report and an analytical review of tl research project being carried on by the University of California Institu of Industrial Relations under a grant from the Rockefeller Foundatioı
Chairman:
Papers: The Relation Between Age and Economic Status
MELVIN REDER, Stanford University
The Size, Nature and Adequacy of The Resources of the Ag
PETER STEINER, University of California
Aging and the Aged in Relation to the Labor Force
ROBERT DORFMAN, University of California
Discussion: FLOYD A. BOND, Pomona College

Doctoral Dissertation Titles

The United Nations Educational, Scientific and Cultural Organization has published *Theses in the Social Sciences.* The material has been collected from more than twenty states, including Australia, Austria, Belgium, Canada, China, France, India, Italy, Netherlands, New Zealand, Switzerland, United Kingdom and the United States of America. In the case of the last-mentioned country, the Department of State forwarded to UNESCO a selected list of doctoral dissertations for 1948-49 dealing with foreign countries and international problems. (In the case of the U.S.A. more complete coverage is now provided by *Doctoral Dissertations Accepted by American Universities,* compiled annually by the Association of Research Libraries, New York. This volume covers the natural sciences and humanities as well as the social sciences. Attention is also drawn to *Dissertation Abstracts* which is published six times a year by University Microfilms, Ann Arbor, Mich., and which provides titles and short abstracts of dissertations in all fields accepted by about thirty U. S. institutions of higher learning. Readers of this *Review* are also acquainted with the annual list of doctoral dissertations in economics that regularly appears in the September number.)

Committee on Economics in Teacher Education

An American Economic Association Committee on Economics in Teacher Education has been named to work with the recently formed Commission on Economics in Teacher Education. The Commission, sponsored by the Joint Council on Economic Education and working in cooperation with a number of professional associations, is undertaking to explore and promote ways of making economics a functional part of general education for future teachers. The Committee is organizing a round table on "Economics in General Education" for the Christmas meetings. It is hoped that this may be a first step in focusing the talents and energies of those members of the Association who have an interest in improving the teaching of economics in the secondary schools. The members of the Committee are Archibald McIsaac, Horace Taylor and Ben Lewis, chairman.

Everett Eugene Edwards Memorial Awards

The Agricultural History Society has established two annual awards, to be known as *The Everett Eugene Edwards Memorial Awards,* to be given to the authors of the two best articles (presidential addresses excluded) published in *Agricultural History* in each year. One prize of $50.00 is to be assigned to an author who is in course of taking a degree and one prize of $50.00 to an author who is a more advanced scholar.

Deaths

Lucile Eaves, professor emerita of Simmons College, died January 20, 1953.

Paul A. Fischer, U.S.N.R., retired and former government economist, died March 28, 1953.

Robert M. Haig, McVickar professor emeritus of political economy at Columbia University, died June 9, 1953.

George B. Hotchkiss died March 28, 1953.

Hastings Lyon, professor emeritus of the Graduate School of Business, Columbia University, died April 25, 1953.

Frank L. McVey, president emeritus of the University of Kentucky, died January 4, 1953.

Leo Pasvolsky, of the Brookings Institution, died May 5, 1953.

John Sumner, of the University of Buffalo, died in May 1953.

Retirements

N. H. Comish, professor of business administration, University of Oregon, July 195

John I. Falconer, chairman of the department of agricultural economics and rura sociology at the Ohio State University.

Harry J. Ostlund, associate professor at the University of Minnesota, June 1953.

Appointments and Resignations

F. Gerard Adams has been appointed instructor in economics at the University o Michigan.

Morris A. Adelman has been promoted from assistant professor to associate professo of economics at the Massachusetts Institute of Technology.

Kenneth G. Ainsworth has been appointed instructor in economics at Bowdoin Colleg

Eugen Altschul, of the University of Kansas City, was visiting professor of economic at McGill University in the academic session 1952-53.

Dole A. Anderson has been granted leave from New York University to serve as asso ciate professor of air transport economics and acting chairman of the department o economics of Brazil's Institute of Aeronautical Technology at São José dos Campos, Sã Paulo.

D. Armstrong has been appointed sessional lecturer in economics for the current aca demic year at McGill University.

Kenneth J. Arrow has been promoted to professor of economics and has been appointe executive head of the department of economics at Stanford University.

Jack Ashley has been appointed instructor in economics at Occidental College.

George Babilot has resigned from the University of Nebraska to accept a Carnegi fellowship at the University of Oregon.

Frank T. Bachmura has been appointed assistant professor of economics at Deniso University.

Sanford L. Bacon, formerly of the University of Minnesota, has joined the faculty c the Wharton School of Finance and Commerce, University of Pennsylvania, as an in structor.

Robert H. Bethke has been appointed vice president of the Discount Corporation c New York.

C. Perry Bliss has been promoted to assistant professor of economics and busine organization at the University of Buffalo.

William T. Blomquist has been appointed assistant director of the Bureau of Personn Relations and Placement and faculty lecturer in management in the School of Busines Indiana University.

George F. Bloom has been promoted to assistant professor of real estate in the Scho of Business, Indiana University.

E. V. Bowden has been appointed instructor in economics at Duke University.

Irving Brecher has been appointed assistant professor of economics at Northwester University.

Norman V. Breckner has joined the department of economics at the University c California, Los Angeles, as acting assistant professor.

Hans Brems, lecturer in economics, has been appointed assistant professor of economi at the University of California, Berkeley.

William H. Brown, Jr., of Yale University, has been appointed assistant professor c economics at Swarthmore College.

Marion A. Buck has accepted a position as research economist with the Joint Legi lative Committee on Commerce and Economic Development of the State of New York.

John A. Buttrick, formerly of Northwestern University, has been appointed associate professor of economics at the University of Minnesota.

Burnham Campbell has been appointed instructor in economics at Stanford University.

Helen G. Canoyer, of the University of Minnesota, has accepted the deanship of the New York State College of Home Economics at Cornell University.

Reynold E. Carlson has resigned from Vanderbilt University to accept a position as economist with the International Bank for Reconstruction and Development.

John M. Chapman has been promoted to professor of banking in the Graduate School of Business, Columbia University.

Carl F. Christ has been promoted to associate professor of political economy at the Johns Hopkins University.

Edward Coen, formerly of the London School of Economics, has been appointed assistant professor of economics at the University of Minnesota.

Jerome B. Cohen has been promoted to associate professor and is subchairman of the department of economics in the School of Business and Public Administration, College of the City of New York.

Charles L. Dearing has been granted a leave of absence from the Brookings Institution to serve as Deputy Under Secretary of Commerce for Transportation in the Department of Commerce.

Jay D. Cook, Jr., has resigned from Denison University to accept an appointment as assistant professor of economics at Washington and Lee University.

M. E. Cravens has been appointed associate professor of agricultural economics at the Ohio State University.

George Dalton has been appointed instructor in economics at Boston University.

Raymond de Roover, of Wells College, has been elected foreign member to the Royal Flemish Academy of Belgium, Section of Letters and Social Sciences, in recognition of his contributions to the history of banking in Belgium.

Laurence de Rycke has been granted a leave of absence from Occidental College to act as assistant field director for the Committee for Economic Development.

Norman H. Deunk, Jr., has been appointed assistant professor of management in the School of Business, Indiana University.

J. Frederic Dewhurst has been named executive director of the Twentieth Century Fund, succeeding Evans Clark, the Fund's first executive director, who has retired after twenty-five years in the post.

Robert Dickerson has been appointed assistant professor of economics at Occidental College.

Douglas F. Dowd, of the University of California, Berkeley, has accepted an appointment as assistant professor of economics at Cornell University.

James Elliott has joined the staff of the department of economics at Denison University as assistant professor.

Paul W. Ellis has been appointed legislative auditor for the Washington State Legislative Budget Committee.

Joseph O. Englet has been appointed assistant professor of economics at Loyola University, Chicago.

Wilson Farman has been promoted from assistant professor to associate professor of economics at Colgate University.

James W. Ford, formerly of Columbia University, has been appointed assistant professor in the department of economics and business administration of Vanderbilt University.

Charles D. Forrest has been promoted to professor of advertising in the School of Business, Indiana University.

Robert R. France has been appointed assistant professor of economics at Princ University.

Philip I. Friest has been appointed instructor in economics at the University of Mi sota in Duluth.

Franz Gehrels, recently economist for the Mutual Security Agency Mission to Gern and France, has joined the faculty of the University of Minnesota as assistant profe of economics.

George Gibbs has been promoted from assistant professor to associate professo accounting at Claremont Men's College.

Charles Gilbert has been appointed instructor in economics in the School of Comm Accounts, and Finance of New York University.

Cornelius W. Gillam has been promoted to assistant professor of business law in School of Business of the University of Chicago.

John B. Glassburner, of the University of California, Berkeley, has taken a pos in the Federal Reserve Bank of San Francisco.

Frank H. Golay has been appointed assistant professor of economics at Cornell versity.

Leland J. Gordon has been granted a year's leave from Denison University to ticipate in the University of Maryland Overseas Program in Europe.

William B. Greenwald has been promoted to assistant professor of economics in the College, New York.

Gregory Grossman has been appointed assistant professor of economics at the Unive of California, Berkeley.

John G. Gurley, of Princeton University, has accepted an appointment as asso professor of economics at the University of Maryland.

Chadwick J. Haberstroh has been appointed instructor in economics at the Unive of Minnesota.

C. Lowell Harriss, of Columbia University, will lecture this year at the Netherl Institute of Economics, Rotterdam, under a Fulbright appointment.

George T. Harris has been appointed assistant professor of finance in the Schoc Business, Indiana University.

Harry P. Hartkemeier, of the University of Missouri, has been awarded a Fulbı grant for travel and lecturing in Europe and the Middle East.

William H. Hayt has been appointed professorial lecturer in business administratio the School of Business of the University of Chicago.

William M. Hench, of Pennsylvania State College, on active duty in the U.S. Air F is stationed in Washington, D.C., with a liaison unit maintained by the Research St Unit of the Air University.

Eldon S. Hendricksen has been appointed assistant professor of accounting at the versity of Idaho.

Edward S. Herman has been appointed an associate in economics at the Universit California, Berkeley.

Irwin L. Herrnstadt has been appointed instructor in the department of economics social science, Massachusetts Institute of Technology.

L. G. Hines has been promoted from assistant professor to professor of economic Dartmouth College.

Oleg Hoeffding, formerly of Columbia University, has accepted a position as econo with the RAND Corporation in Santa Monica, California.

Austin G. Hoggatt has been appointed instructor in economics at the Universit Minnesota.

Robert J. Holloway has been promoted to associate professor of economics and mai ing at the University of Minnesota.

James D. Holyoak has been appointed instructor in accounting at the University of Idaho.

Frederick E. Horn has been promoted to associate professor of accounting in the Graduate School of Business, Columbia University.

Hendrik S. Houthakker has accepted an appointment as acting associate professor of economics at Stanford University, effective in January 1954.

Helen M. Hunter has been appointed lecturer in economics at Swarthmore College.

Walter Isard has been appointed associate professor of regional economics, department of city and regional planning, Massachusetts Institute of Technology.

Robert K. Jaedicke, formerly of the University of Washington, has joined the faculty of the University of Minnesota as an instructor.

Dudley Johnson has been appointed assistant professor of economics at Washington College, Chestertown, Maryland.

James B. Jones, of the University of Michigan, has been appointed instructor in economics at Dartmouth College.

Jacob O. Kamm has resigned as director of the School of Commerce at Baldwin-Wallace College to become a financial and investment consultant.

Norman Kaplan has resigned as assistant professor of economics at Stanford University.

Robert A. Kavesh has been appointed assistant professor of economics at Dartmouth College.

Arthur Kemp, formerly of New York University, has joined the faculty of Claremont Men's College as professor of economic education.

Charles J. Kennedy, on leave from the University of Nebraska, is in Boston where he is preparing a history of the Boston and Maine Railroad.

Martin D. Kessler has been appointed instructor in economics at the University of Minnesota.

Marshall D. Ketchum has been promoted to professor of finance in the School of Business of the University of Chicago.

William H. Knowles has been granted a year's leave from Michigan State College to accept a Fulbright research fellowship for study of labor conditions in the West Indies.

H. T. Koplin has been promoted from instructor to assistant professor of economics at the University of Oregon.

Robert J. Lampman has been promoted to associate professor of economics at the University of Washington.

Wassily W. Leontief has been appointed Henry Lee Professor of Economics at Harvard University.

Martin L. Lindahl has been appointed chairman of the department of economics at Dartmouth College, succeeding Clyde E. Dankert.

John W. Lowe has been appointed instructor in economics at the University of Florida.

Robert Macdonald has joined the staff of the University of California at Los Angeles as acting assistant professor of economics and research associate in the Institute of Industrial Relations.

George F. Mair has been appointed assistant professor of economics at Smith College.

Ossian R. MacKenzie has resigned from Columbia University to become dean of the newly established School of Business at Pennsylvania State College.

Jesse W. Markham, of Vanderbilt University, has been appointed visiting associate professor of economics at Princeton University for the current academic year.

Bernard J. Marks has joined the faculty of the University of Minnesota as an instructor.

Edmund J. McCarthy has been appointed to an instructorship at the University of Mi sota.

Joseph L. McDonald has been appointed dean of the college at Dartmouth Colle

John S. McGee, of the University of California at Los Angeles, has been appoi research associate in the Law School of the University of Chicago for 1953-54.

Joseph P. McKenna has been promoted to an associate professorship at the Unive of Minnesota.

Robert B. McNee has been reappointed assistant professor of economics at the College, New York.

Hermann L. Meyer-Lindenberg has been reappointed lecturer in economics for spring term in 1954 at the University of California, Berkeley.

Philip T. Meyers, formerly of the University of Texas, has joined the faculty of University of Minnesota as lecturer.

Merton H. Miller, recently visiting lecturer in economic history at the London Sc of Economics, has been appointed assistant professor of economics at the Carnegie Inst of Technology.

Wayne E. Moeller has been appointed instructor in economics in the College of Bus Administration of the University of Nebraska.

Mary E. Murphy, of Los Angeles State College, has accepted a Fulbright fellow to Queensland University, Australia. She will also serve as annual research lecturer foi Australian Society of Accountants.

John H. Nixon has been appointed assistant professor of economics at the City Col New York.

George E. Nunn has been promoted to assistant professor of accounting in the Sc of Business, Indiana University.

James R. G. Olson, formerly of the University of Minnesota, has joined the sta the International Milling Company in Minneapolis.

Guy H. Orcutt has been promoted to associate professor of economics at Har University.

Frederick Ottman has been appointed associate professor of economics in the Sc of Commerce, Accounts, and Finance of New York University.

Ernest M. Patterson, who served as president of the American Academy of Poli and Social Science from 1930 until June 1953, has been named president emeritus is succeeded by Dr. James C. Charlesworth.

H. Austin Peck has been promoted to associate professor of economics at the Uni sity of Maine.

Robert H. Pelley has been appointed assistant professor of agricultural economics a Ohio State University.

Orme W. Phelps, on leave from Claremont Men's College, has a Ford Found award for research in governmental administration.

Frank C. Pierson, of Swarthmore College, is devoting the current academic yea research with the Labor Relations Council of the University of Pennsylvania.

Robert S. Polkinghorn has been appointed instructor in economics and business rese in the College of Business Administration of the University of Nebraska.

Helen C. Potter, formerly of the University of California, has been appointed asso professor of economics at Loyola University, Chicago.

Leonard Rall has been promoted to professor of economics at Michigan State Col

Paul H. Randolph, formerly of the University of Minnesota, has joined the facult of the Armour Institute of Technology.

Raymond Rawls, of the University of Pennsylvania, has been appointed instructc business finance in the College of William and Mary for the current academic year.

Elton Kayack has been appointed assistant professor of economics at the University of Idaho.

Melvin W. Reder has been promoted to professor of economics at Stanford University.

William C. Reher has been appointed instructor in economics at the University of Michigan.

Lawrence J. Remington has been appointed instructor at the University of Minnesota.

Stewart H. Rewoldt has been appointed assistant professor of marketing in the School of Business of Indiana University.

Roy W. Richards has been appointed faculty lecturer in accounting in the School of Business of Indiana University.

Laurie S. Robertson has been appointed assistant professor of economics in the College of Business Administration of the University of Nebraska.

Ross M. Robertson has resigned from the University of Tennessee to accept a position as financial economist with the Federal Reserve Bank of St. Louis.

Romney Robinson has been promoted from instructor to assistant professor of economics in the department of economics and social science, Massachusetts Institute of Technology.

Marvin E. Rozen has resigned from the University of California to accept a Social Science Research fellowship for study in England.

Sverre I. Scheldrup has been promoted to associate professor of personnel and labor economics at the University of Idaho.

Harold P. Scheinkopf has been appointed research manager of the James Thomas Chirurg Co., New York and Boston advertising agency.

Don A. Seastone has been appointed instructor in economics at Bates College.

John W. Sharp has been promoted to assistant professor of agricultural economics at the Ohio State University.

Karl W. Sharp has been appointed instructor in accounting in the College of Business Administration of the University of Tennessee.

Robert P. Shay has been promoted to associate professor of economics at the University of Maine.

Douglas S. Sherwin has been appointed chief of the Production Control Branch in the Office of Synthetic Rubber of the Reconstruction Finance Corporation.

Robert A. Sigafoos has left the Illinois Department of Finance to act as consultant to the treasurer of Puerto Rico.

Fred Slavick, of Princeton University, has accepted an appointment as research associate at the School of Industrial and Labor Relations, Cornell University.

O. W. Smalley, of Northwestern University, has been appointed assistant professor of economics at Loyola University.

Mervin G. Smith has been appointed chairman of the department of agricultural economics and rural sociology at the Ohio State University.

Victor E. Smith has been promoted to professor of economics at Michigan State College.

Warren L. Smith, of the University of Michigan, has been appointed assistant professor of money and banking at the University of Virginia.

J. Douglas Snider has been promoted to director of the Bureau of Personnel Relations and Placement of the School of Business, Indiana University.

Charles H. Spencer has been promoted to assistant professor of accounting in the School of Business, Indiana University.

Jerome L. Stein has been appointed instructor in economics at Brown University.

Jack Stockfisch has resigned from Occidental College to accept an appointment as assistant professor in the department of economics at the University of Wisconsin.

Frank T. Stockton is retiring from his position as dean of University Extension at t University of Kansas. He will continue on the staff as director of special projects Extension and professor of economics.

George Stolnitz has been appointed assistant professor of economics at Princeton Ui versity.

Wolfgang F. Stolper has been promoted to professor of economics at the University Michigan.

Richard K. Stuart has been promoted to associate professor of economics and busin administration at the University of Maine.

Theodore A. Sumberg has accepted a three-month appointment as consultant on fis problems to the Chief of Mission, Mutual Security Administration, Saigon, Indo-Chi

Ben B. Sutton has been promoted to an associate professorship at the University Minnesota.

Lyell J. Thomas, of the University of Virginia, has been appointed acting assistant pı fessor in economics at Wake Forest University.

David W. Thompson has been promoted to professor of accounting in the School Business, Indiana University.

William O. Thweatt, of the American University of Beirut, has been awarded a Fc Foundation fellowship to study problems of economic development relating to t Middle East at the Institute of Colonial Studies, Oxford, England.

Robert E. Walden has been promoted to professor of accounting in the School Business, Indiana University.

Arthur E. Warner has been promoted to assistant professor of business administrati in the School of Business, Indiana University.

Richard S. Weckstein, of New York University, has been appointed assistant profes of economics at the University of Buffalo.

Lionel Weiss has been promoted from assistant professor to associate professor statistics at the University of Virginia.

Roger W. Weiss has been appointed assistant professor of economics at Vanderl University.

Harold B. Wess has resigned from the Graduate School of Business of Columbia U versity to join the faculty of American University in Washington.

Fred Westfield has been appointed lecturer in economics at Northwestern Universi

Thomson M. Whitin, of Princeton University, has accepted an appointment as assist professor in the School of Industrial Management, Massachusetts Institute of Technolo

Albert K. Wickesberg, formerly of Ohio State University, has been appointed lectu at the University of Minnesota.

Sylvia Wiseman has been appointed lecturer in economics at McGill University for t current session.

William B. Wolf has been appointed research associate in the School of Business of t University of Chicago.

F. E. Wolfe, of the Procter and Gamble Company, served as visiting professor at t University of Kentucky in the 1953 spring term.

Henry E. Wrapp has been promoted to associate professor of production in the Sch of Business of the University of Chicago.

David McC. Wright has been granted leave by the University of Virginia for the cı rent session to be a Fulbright professor of economics at Oxford University.

FIFTIETH LIST OF DOCTORAL DISSERTATIONS IN POLITICAL ECONOMY IN PROGRESS IN AMERICAN UNIVERSITIES AND COLLEGES

The present list specifies doctoral degrees conferred during the academic year terminating June 15, 1953, and theses undertaken in the same period. In the latter category the year following the dissertation title is the probable date of completion.

Economic Theory; General Economics

Degrees Conferred

HESHMAT ALA'I, Ph.D. Georgetown 1953. Theory of income distribution under the Islamic law with special reference to the function of residual income recipients.

ROBERT L. ALLEN, Ph.D. Harvard 1953. Agglomeration and spatial patterns in location analysis.

JAMES W. BECK, Ph.D. Iowa 1953. A macroeconomic approach to distribution theory.

GEORGE K. BRINEGAR, Ph.D. Chicago 1952. Short run income-expenditure relationships.

JOE E. BROWN, Ph.D. Texas 1953. The influence of population theory on the development of economic thought.

HUA-CHANG CHOW, Ph.D. Chicago 1952. The influence of interregional commodity and factor movement on the distribution of income.

JERE W. CLARK, Ph.D. Virginia 1953. Intercommunity commodity flows within the United States.

ALFRED W. COATS, Ph.D. Johns Hopkins 1953. Methodological controversy as an approach to the history of American economics, 1885-1930.

DANIEL R. FUSFELD, Ph.D. Columbia 1953. Economic thought of Franklin D. Roosevelt to 1932.

FRANCIS C. GENOVESE, Ph.D. Wisconsin 1953. A going concern theory of profits.

JOHN B. GLASSBURNER, Ph.D. California 1953. The social economics of Alfred Marshall.

EDWARD E. LECLAIR, JR., Ph.D. Clark 1953. Economic value in non-literate cultures: a cross-cultural reorientation in the theory of value.

ERWIN E. NEMMERS, Ph.D. Wisconsin 1953. Hobson and under-consumption.

MARTIN SEGAL, Ph.D. Harvard 1953. Some economic aspects of adjustment to technological change.

MARTIN SHUBIK, Ph.D. Princeton 1953. Competition and the theory of games.

MAUNG TUN THIN, Ph.D. Harvard 1953. Theory of markets.

CLEMENS B. THOMAN, Ph.D. Texas 1953. Capital—formation theory in transition.

WALTER C. WAGNER, Ph.D. Texas 1953. The theory of economic equilibrium: a reflection of social reciprocity.

WILLIAM R. WATERS, Ph.D. Georgetown 1953. Entrepreneurship, dualism and causality: an appreciation of the work of Joseph A. Schumpeter.

RICHARD S. WECKSTEIN, Ph.D. Yale 1953. The influence of the rate of interest on personal saving.

J. C. WELDON, Ph.D. McGill 1952. Theory of distribution.

LIST OF DOCTORAL DISSERTATIONS

Theses in Preparation

MARTIN J. BAILEY, B.A. California (Los Angeles) 1951. The general equilibrium tions of monetary theory. 1954. *Johns Hopkins.*

GARY S. BECKER, B.A. Princeton 1951. Discrimination: a theoretical and statistic 1954. *Chicago.*

JAMES F. BECKER, B.A. Iowa 1948; M.A. 1949. The relation of normative econon positive science: a critical analysis of selected examples. 1955. *Columbia.*

RICHARD E. BRUMBERG, Ph.B. Chicago 1948; M.A. Illinois 1951. Utility analysis consumption function: an empirical test and its meaning. 1954. *Johns Hopki*

JAMES DINGWALL, B.A. Queens (Ontario) 1938; M.A. 1939. Laissez faire and th of factions. 1954. *Chicago.*

LORETTA M. DUNPHY, B.S.C. Drake 1948; M.A. Catholic 1950. Simon Newco contribution to economic thought. 1954. *Catholic.*

WILLIAM C. FREDERICK, B.A. Texas 1950. A cultural theory of money. 1954. *Tex*

E. GRASBERG. The theory of the firm. 1953. *McGill.*

DANIEL H. GRAY, B.A. Hobart 1941; M.A. Buffalo 1950. Theory of the interio firm. 1954. *Massachusetts Institute of Technology.*

HAROLD A. J. GREEN, B.A. Brasenose 1947; M.A. Oxford 1948. The social welfa tion in the writings of certain moral and political philosophies. 1954. *Massa Institute of Technology.*

ROBERT S. HANCOCK, B.S. North Central 1947; M.S. Illinois 1949. Selected as oligopoly and oligopsony. 1954. *Illinois.*

B. J. HINTON, B.A. Baylor 1947; M.A. 1948. Case studies in business pricing te as contrasted with price theory. 1954. *Louisiana State.*

ROBERT W. KAUTZ, B.C.S. Drake 1948; M.A. 1950. The concept of security and t vidual firm. 1955. *Indiana.*

RONAN G. MACDONALD, B.A. St. Dunstan's 1943; M.A. Toronto 1947. Innovat the modern industrial corporation. 1955. *Wisconsin.*

LAWRENCE F. MANSFIELD, B.A. Washington & Lee 1947; M.A. Florida 1948. Velo the multiplier. 1954. *North Carolina.*

ALVIN L. MARTY, B.A. California (Los Angeles) 1946. The theory of the pr economy. 1955. *California.*

E. SCOTT MAYNES, M.A. Wesleyan 1949. Concepts of saving and their implicatio *Michigan.*

ERSKINE W. MCKINLEY, B.A. University of the South 1940; M.A. New York 19 theory of economic growth in the classical school. 1954. *California.*

JACOB MINCER, B.A. Emory 1950. Studies in the acceleration principle. 1955. *C*

HERBERT R. RUNYON. Contributions of Irving Fisher to modern theory. 1955. *M*

JAMES R. SCHLESINGER, B.A. Harvard 1950; M.A. 1952. Wage-cost-price relat and economic progress. 1953. *Harvard.*

THOMAS E. SUMMERS, B.A. Stanford 1947; M.A. 1949. Limitations on the size firm. 1955. *Stanford.*

ROBERT F. VOERTMAN, B.S. North Texas State 1946; M.A. Texas 1948. Technol cultural evolution: a comparative and critical study. 1954. *Texas.*

DANIEL N. WEIHERMANN, B.A. City (New York) 1949; M.A. Columbia 1950. A for short-term economic forecasting. 1955. *Columbia.*

FRED M. WESTFIELD, B.A. Vanderbilt 1950. An examination of the inflationary process and alternative public policies within the framework of multi-sectoral models. 1954. *Massachusetts Institute of Technology.*

WILLIAM M. YOUNG, B.A. Syracuse 1949; M.A. Princeton 1951. Priorities and allocations. 1954. *Princeton.*

Economic History; National Economies; Economic Development

Degrees Conferred

TURNER ALLEN, Ph.D. Kentucky 1953. The highway and canal system in eighteenth century France.

VINAYAK V. BHATT, Ph.D. Harvard 1953. Employment and capital formation in underdeveloped countries.

RONDO CAMERON, Ph.D. Chicago 1952. French foreign investment, 1850-1880.

SHE-WO CHANG, Ph.D. Iowa 1953. Problems of industrialization in densely populated underdeveloped countries.

YOU KENG CHIANG, Ph.D. Chicago 1952. British devaluation in 1949.

AN-MIN CHUNG, Ph.D. Pennsylvania 1953. Industrial development in China: history, population prospects.

STANLEY H. COHN, Ph.D. Chicago 1952. The role of the fiscal system in the soviet economy.

CHARLES A. COOMBS, Ph.D. Harvard 1953. Financial policy in Greece during 1947-48.

PAUL H. COOTNER, Ph.D. Massachusetts Institute of Technology 1953. Transport innovation and economic development: the case of the U.S. steam railroads.

GEORGE P. COUTSOUMARIS, Ph.D. Chicago 1953. Possibilities of economic development in the Greek agriculture.

RICHARD A. EASTERLIN, Ph.D. Pennsylvania 1953. Some conceptual aspects of the comparative measurement of economic growth.

CHARLES N. HENNING, Ph.D. California (Los Angeles) 1952. Basis of an independent Korea.

JAMES INGRAM, Ph.D. Cornell 1952. Economic change in Thailand.

BURTON H. KLEIN, Ph.D. Harvard 1953. Germany's economic preparations for war.

THOMAS P. LANTOS, Ph.D. California 1953. Recent economic development in New Zealand.

HAROLD LUBELL, Ph.D. Harvard 1953. The French investment program: a defense of the Monnet plan.

WILLIAM J. NICHOLSON, Ph.D. St. Louis 1953. Some aspects of the economic reconstruction of the Philippines.

FRANK L. ROBERTS, Ph.D. Illinois 1952. An economic analysis of the Chilean production development corporation. A case study in economic cooperation.

DANIEL L. SPENCER, Ph.D. American 1953. Mixed and joint corporations as tools of economic development: a case study based on India's experiments in new types of enterprises.

JOHN S. SPRATT, Ph.D. Texas 1953. Economic history of Texas 1875-1900.

JAMES H. STREET, Ph.D. Pennsylvania 1953. The mechanization of cotton production: a case study in the theory of economic development.

JAN B. TULASIEWICZ, Ph.D. Michigan 1953. Northern Rhodesia and its development.

W. Okefie Uzoaga, Ph.D. Cornell 1953. The impact of foreign loans on Liberia.

Scott D. Walton, Ph.D. Iowa (Ames) 1953. Agriculture and federal antitrust activity an economic history and analysis.

Theses in Preparation

Doris G. Adams, B.A. California 1947. Population and resource problems in Lebanon 1955. *California.*

W. E. Adams, B.A. McGill 1948. The economics of development. 1953. *McGill.*

Warren E. Adams, B.A. California 1947. Land tenure and agricultural labor in Lebanon 1955. *California.*

Frederick C. Armstrong, B.A. Southern Illinois 1947; M.A. Michigan State 1948 Community measures for economic development. 1953. *Illinois.*

Abraham S. Becker, B.A. Harvard 1949; M.A. Columbia 1952. Economics of the cotton textile industry in the U.S.S.R. 1955. *Columbia.*

Walter D. Bowles, B.A. Washington 1949; M.A. Columbia 1952. The economics of the lumber industry of the Soviet Union. 1955. *Columbia.*

Christos E. Cassimatis, B.A. Indiana State Teachers 1949; M.A. Indiana 1950. Post-war monetary reforms in Greece 1944-1951: a critical evaluation of the attempts a monetary rehabilitation. 1955. *Indiana.*

Nam Kyu Chung, B.S. Kyoto 1941. The rehabilitation program of Korea. 1954. *Wisconsin.*

Seymour J. Cohen, B.S.S. City (New York) 1942; M.A. Columbia 1949. Monetary problems of the Middle East since 1939. 1954. *Pittsburgh.*

George C. Constantacopoulos, Dipl. Law, Athens, Greece, 1937. Competition and economic development in Greece, 1954. *Columbia.*

Chester L. Cooper, B.S. New York 1939. The role of the Chettyar moneylenders in th economic development of Lower Burma. *American.*

Peter Dimitriyevitch, B.A. Williams 1949; M.P.A. Harvard 1953. Industrial growth in postwar Yugoslavia. 1954. *Harvard.*

Norton T. Dodge, B.A. Cornell 1948; M.A. Harvard 1951. The soviet tractor industry and the mechanization of agriculture. 1954. *Harvard.*

John C. Eddison, B.A. Cornell 1942; M.S. 1948. The development of the paper industry in India. 1955. *Massachusetts Institute of Technology.*

Robert F. Emery, M.A. Michigan 1952. The contribution of Burmese financial institution to economic development. 1955. *Michigan.*

J. Gerin-Lajoie, B.A. Paris 1945; M.A. St. Louis 1947. Wages and profits in the Canadian primary textile industries. 1954. *McGill.*

William P. Glade, Jr., B.A. Texas 1950; M.A. 1951. The role of government enterprise in the economic development of undeveloped regions: Mexico, a case study. 1954. *Texas*

Khalil A. G Hamouda, B.S. Alexandria, Egypt, 1946; M.S. Minnesota 1953. Economic aspects of land tenure in Egypt. 1955. *Minnesota.*

James B. Hendry, B.A. William and Mary 1946; M.A. Columbia 1951. Occupation policy and post-war economic development in Japan. 1955. *Columbia.*

William C. Hollinger, B.A. Swarthmore 1947. The theory of economic development and the principle of comparative advantage. 1954. *Massachusetts Institute of Technology*

Edmond C. Huthinson, B.A. Southwestern 1936; M.A. Virginia 1937. Postwar financial developments in Japan. 1954. *Virginia.*

S. Sioma J. Kagan, Diplom-Ingenieur, Berlin 1931; M.A. American 1949. The population factor—an obstacle to economic development with special reference to Japan. 1954. *Columbia.*

Abdul Amir Kubbah, B.B.A. American University of Beirut 1944. Planned industrialization of Iraq. 1954. *New York.*

Chung-Tai Lu. Elements of a theory of economic development for underdeveloped countries: a generalization of projected patterns of economic development in countries surveyed by the United Nations organizations. 1954. *Maryland.*

Santiago P. Macario, M.A. University of Cordoba, Argentina, 1941. Development in the field of agriculture as a factor in industrialization of Latin American countries. 1954. *Texas.*

G. B. McConkey, B.A. Manitoba 1949; M.A. Toronto 1950. The relevance of certain economic concepts to some phases of Canadian economic development. 1954. *Toronto.*

Paul F. McGouldrick, B.A. Maine 1947; M.A. Harvard 1952. Danish agriculture in the 19th century and its relationship to the English trading area. 1953. *Harvard.*

Leon A. Mears, B.A. Minnesota 1930. Impediments to and inducements for private development investment; Puerto Rico, a case study. 1953. *California.*

Orlando J. Menezes, B.A. Bombay 1948; M.A. Poona 1950; M.A. Princeton 1952. The theory of economic growth for underdeveloped countries. 1953. *Princeton.*

Walther P. Michael, B.S. Columbia 1950. Domestic capital supply in the economic development of India. 1955. *Columbia.*

M. Miller, B.Com. McGill 1945; M.Sc. University of London 1949. Policy aspects of Quebec economic development. 1953. *McGill.*

Rodney H. Mills, Jr., B.A. Yale 1944; M.A. Yale 1948. Italy in the post-war world economy. 1955. *Columbia.*

Gholam R. Moghadam, B.A. Upsala. A study of economic development in Iran. 1954. *Stanford.*

Abdul Moquit, B.A. University of Punjab 1944; M.A. 1946. Economic development of Pakistan. 1955. *Wisconsin.*

Amotz Morag, M.A. Hebrew University (Jerusalem) 1952. Financing development. 1954. *Johns Hopkins.*

Max G. Mueller, B.S. London 1949. The role of capital in underdeveloped countries. 1955. *Illinois.*

George C. Nickolakia, B.A. American (Cairo) 1943; M.A. Virginia 1952. Some aspects of economic reconstruction in Korea. 1954. *Virginia.*

Alvan J. Obelsky, M.A. Michigan 1952. Technological change and the entrepreneur in Japan. 1955. *Michigan.*

Harlow Osborne, B.A. Colgate 1936; M.B.A. New York 1940; M.S. Denver 1942. Contribution of national income analysis to the theory of economic development. 1954. *Georgetown.*

Moeen U. Qureshi, B.A. Government College, Lahore, Pakistan 1949; M.A. 1951. The evolution of banking and credit institutions in Pakistan, 1947-1952. 1953. *Indiana.*

Carolyn A. Recht, B.A. Stanford 1947, M.A. Radcliffe 1949. The impact of industrialization on soviet housing conditions. 1953. *Harvard.*

Charles E. Rollins, B.A. San Diego State 1950. The role of raw materials exploitation in economic development with special consideration to Bolivia and Venezuela. 1954. *Stanford.*

Aziz Sayeed, B.S. Agricultural College, Poona, 1946. Role of cooperation in the social a economic planning of India and principles of cooperation. 1955. *California.*

Arthur O. Sharron, B.S. City (New York) 1939. The postwar Japanese price structu (with particular reference to food) and its implications on the basic economic proble of Japan. *American.*

Ahmad F. Sherif, S.B.Com. Farouk I 1947; M.B.A. Chicago 1951. The role of capi formation in industrialization of underdeveloped countries. 1953. *Chicago.*

Fred C. Shorter, B.A. Reed 1944; M.A. Haverford 1947. Recent developments in t jute industry. 1954. *Stanford.*

E. C. Sievwright, B.S. London 1950. The problem of economic growth in a provinc economy. 1953. *McGill.*

Howard F. Smith, B.A. Wayne 1940; M.B.A. Harvard 1942. United Nations plan f the reconstruction of Korea. *American.*

Jerome L. Stein, B.A. Brooklyn; M.A. Yale 1950. The pattern of economic develo ment in selected British African colonies since 1940. 1954. *Yale.*

Chris A. Theodore. Demographic aspects of the Greek economic problem. 1954. *Bosto*

Joseph W. Thompson, B.S. Illinois 1948; M.S. 1949. An economic history of the Mesa division of the Great Northern Railroad. 1954. *Illinois.*

Pedro C. M. Teichert, B.A. Mexico City College 1950; M.A. 1951. Uruguay's econon development policies. 1953. *Texas.*

S. Wiseman, B.A. McGill 1948; M.A. 1950. Theory of planning for industrialization underdeveloped areas. 1953. *McGill.*

Taro Yamane, B.A. Tokyo 1941; M.A. Wisconsin 1951. Studies in the Japanese postw inflation. 1954. *Wisconsin.*

Philip H. Zoldester, Dr.rer.pol. Vienna 1948. The Austrian labor movement. 1954. *Ne York.*

Statistics and Econometrics

Degrees Conferred

George H. Borts, Ph.D. Chicago 1953. Cost and production relations in the railw industry.

Victor R. Farhi, Ph.D. New York 1952. An analysis of selected measures of the Ame can economy.

Burton L. French, Ph.D. Iowa (Ames) 1952. Estimation by simultaneous equations resource productivities from time series and cross sectional farm observations.

Shinichi Ichimura, Ph.D. Massachusetts Institute of Technology 1953. Inquiry in non-linear macro-dynamic theories of economic fluctuations.

...rt E. Kuenne, Ph.D. Harvard 1953. The use of input-output techniques for t ...nation of employment in the Delaware valley.

...-Kung Lin, Ph.D. Illinois 1952. On using index numbers for real national incon ...aluations.

John M. Mattila, Ph.D. Wisconsin 1953. Econometric analysis of investment in t construction industry.

Norman Rudy, Ph.D. Chicago 1952. Some problems in the economics of industri sampling inspection.

RILEY C. SPROWLS, Ph.D. Chicago 1951. A consideration of the hypothesis that utility analysis can explain choices involving risk.

Theses in Preparation

LOUIS P. CECCHINI, B.A. Wesleyan 1942; M.A. 1944. The historical development of time series analysis. 1954. *Catholic.*

PETER CODY, B.A. Yale 1947; M.A. 1948. The concept of production measurement. 1954. *Yale.*

BRUCE E. EDWARDS, M.A. Michigan 1950. Statistical derivation of regional and inter-regional input-output coefficients. 1954. *Michigan.*

WALLACE W. GARDNER, B.S. Purdue 1942; M.B.A. Michigan 1947. Interindustry relations data and linear programming methods as applied to problems of business management. 1953. *Michigan.*

AMOR GOSFIELD, B.A. Pennsylvania 1929. Puerto Rican input-output study. 1954. *Pennsylvania.*

ELMORE A. HALE, B.A. Gustavus Adolphus 1943; M.A. Illinois 1948. Measurement of geographical differences in cost of living. 1953. *Illinois.*

THOMAS H. HUGHES, B.A. City (New York) 1942; M.A. Catholic 1950. The Federal Reserve Board index of industrial production. 1954. *Catholic.*

THOMAS A. MARSCHAK, Ph.B. Chicago 1947; M.A. Stanford 1952. Application of linear programming to oil distillation. 1954. *Stanford.*

ALVIN MAYNE, B.A. Chicago 1935; M.B.A. 1938. Statistical analysis of competition between the fuels used by American railroads. *Chicago.*

DANIEL E. O'CONNELL, B.A. Washington 1943; M.B.A. 1948. The measurement of industrial productivity by the subproduct and final product methods. 1955. *Wisconsin.*

SIGMUND P. ZOBEL, B.S. Buffalo 1943; M.B.A. 1948. Some applications of statistical quality control techniques to the analysis of economic time series. *Chicago.*

Economic Systems; Planning and Reform; Cooperation

Degrees Conferred

THAD P. ALTON, Ph.D. Columbia 1953. Polish post-war national economic planning.

GREGORY GROSSMAN, Ph.D. Harvard 1953. Capital-intensity: a problem in soviet planning.

JACKSON MEYERS, Ph.D. Southern California 1953. The theory of state monopoly operation of the economy.

Theses in Preparation

ROLLIN O. DUNSDON, B.S. North Dakota 1941; M.S. Oregon State 1948. Financial st ture and dividend policies of cooperatives. 1955. *Wisconsin.*

SIDNEY KLEIN, B.S. California (Los Angeles) 1948; B.A. Southern California 194 economics of the land reform policies of the Chinese Communist Party from O 1949 to December 1952. 1955. *Columbia.*

A. MURRAY, B.A. Manitoba 1949. Economic planning in the modern state. 1954. *Toronto.*

WILLIAM E. WALKER, B.S.A. Toronto 1951; M.S. Wisconsin 1952. The theory of the firm applied to cooperatives. 1954. *Wisconsin.*

National Income and Social Accounting

Degrees Conferred

William I. Abraham, Ph.D. Columbia 1953. Problems of national income measuremen in underdeveloped countries with special reference to the Philippines.

Wilbur T. Billington, Ph.D. Minnesota 1952. Income in the tenth Federal Reserve dis trict—a study in economic development.

Jean Mann Due, Ph.D. Illinois 1953. Canadian consumption patterns.

Irwin Friend, Ph.D. American 1953. Volume and composition of individual's saving i the United States.

Charles E. Johnson, Ph.D. Minnesota 1952. The concept and measurement of busines income for corporate reporting.

Stanley J. Sigel, Ph.D. Harvard 1953. A comparative study of three social accountin systems: national income, input-output, and moneyflows.

Robert M. Soldofsky, Ph.D. Washington (St. Louis) 1953. Arkansas income since 190

Louis Winnick, Ph.D. Columbia 1953. Residential wealth estimates.

Theses in Preparation

Ernest W. Brown, B.A. Oklahoma 1943. National income prior to 1869. 1954. *Pennsylvania*

Bernard Clyman, B.S. Temple 1939. Analysis of the characteristics of income distributio for the selected years, 1925, 1929, 1932, and 1936 (Sample of Delaware Tax Returns) 1954. *Pennsylvania.*

Harold W. Guthrie, M.A. Michigan 1948. Trends of liquid asset—income ratio amon different population groups, 1947-52. 1954. *Michigan.*

Gloria Hile, M.A. Michigan 1951. Interregional balance of payments of the Southeas for 1950. 1954. *Michigan.*

Richard B. Maffei, B.S. Massachusetts Institute of Technology 1945; M.B.A. Pennsyl vania 1948. Changes in the distribution of income by states, 1929-52. 1955. *Pennsylvania*

Edwin Mansfield, B.A. Dartmouth 1951; M.A. Duke 1953. Income and city-size, 195(1954. *Duke.*

Business Fluctuations; Prices

Degrees Conferred

James R. Elliott, Jr., Ph.D. Syracuse 1953. Insulation and the implementation of th Employment Act of 1946.

James Hellie, Ph.D. Minnesota 1952. Securities, price support, interest rates and pric inflation.

Arthur R. Rosenbaum, Ph.D. Columbia 1952. Business attitudes toward counter cyclica planning 1929-1949.

Beryl W. Sprinkel, Ph.D. Chicago 1952. Debt and economic stabilization.

Elsie M. Watters, Ph.D. Texas 1953. An analysis of business fluctuations in New Orleans

Theses in Preparation

D. E. Armstrong, B.A. Alberta 1949; B.Com. 1950. The acceleration principle in relatio to investment output relationships. 1953. *McGill.*

CALVIN P. BLAIR, B.A. Texas 1949. International transmission of business cycles. 1954. *Texas.*

SIDNEY E. CHERNIK, B.A. Manitoba 1947; M.A. Toronto 1948. Studies in the international spread of business cycles. 1954. *Massachusetts Institute of Technology.*

DONALD A. CORBIN, B.S. California 1942; M.B.A. 1943. Accounting reports during inflation and deflation. 1955. *California.*

MAHOMED GHOZLAN, LL.B. Alexandria 1944; M.A. Yale 1947. The recession of 1948-1949. 1954. *Yale.*

JOHN W. HENDERSON, JR., B.A. Denison 1949; M.B.A. Northwestern 1950. Price forecasting and the meat industry. 1954. *Wisconsin.*

JAMES B. JONES, M.A. Michigan 1951. The pattern of debt ownership on stabilization policy. 1955. *Michigan.*

JOHN H. MCCOY, B.S. Kansas State 1940; M.S. 1942. An analysis of wheat prices. 1955. *Wisconsin.*

HENRY L. MILLER, JR., B.A. Kansas 1947; M.A. 1948; B.A. Oxford 1950. An empirical study of the demand for a consumers' durable good. 1954. *Harvard.*

EDWARD R. SOPIARZ, B.S. Wisconsin 1949; M.S. 1950. Aspects of the business cycle in relation to standards of living. 1955. *Wisconsin.*

PAUL W. ZICKEFOOSE, B.A. Seattle Pacific 1939; M.A. Washington 1949. Income and employment in Kansas. 1954. *Kansas.*

Money and Banking; Short-Term Credit; Consumer Finance

Degrees Conferred

JULIAN G. BUCKLEY, Ph.D. New York 1952. The role of the commercial banks of the United States in financing wars 1812-1848.

JOHN W. HANNAFORD, Ph.D. Harvard 1953. French interwar monetary problems.

GEORGE T. HARRIS, Ph.D. Iowa 1953. The capital structure in American banking.

EDWARD S. HERMAN, Ph.D. California 1953. The Transamerica case: a study of the Federal Reserve Board antitrust proceeding.

LESTER B. MCALLISTER, JR., Ph.D. Oregon 1953. Monetary and banking theories of Albert Gallatin.

LAWRENCE J. MINET, Ph.D. Columbia 1953. Changes in reserve requirements of commercial banks in the United States and foreign nations 1930-1950.

H. ROBERT POWELL, Ph.D. Illinois 1952. Concepts of creditorship.

BLAINE G. SCHMIDT, Ph.D. St. Louis 1953. A statistical study of credit unions in Missouri.

IRA O. SCOTT, JR., Ph.D. Harvard 1953. Monetary policy, the theory of assets, and the availability of credit.

THOMAS E. WENZLAU, Ph.D. Illinois 1953. Canadian postwar monetary policy 1946-195–.

Theses in Preparation

ROBERT P. BLACK, B.A. Virginia 1950; M.A. 1951. Carter Glass and the development of the Federal Reserve System. 1955. *Virginia.*

CARL T. BREHM, B.A. Drake 1949; M.A. 1950. A critical evaluation of the voluntary credit restraint program of 1951-1952. 1955. *Indiana.*

PHILLIP CAGAN, M.A. Chicago 1951. The monetary dynamics of hyperinflations. 195 Chicago.

BENJAMIN CHINITZ, B.A. Yeshiva 1945; M.A. Brown 1951. The demand for cash balance 1954. *Harvard.*

WALTER L. CRAFFORD, B.A. San Diego State 1948. Commercial bank credit: a case study 1955. *California.*

REYNOLD P. DAHL, B.S. Minnesota 1949; M.S. 1950. An economic analysis of the short term agricultural lending activities of Minnesota country banks. 1954. *Minnesota.*

M. GORDON DANIELS, B.A. Doane 1947; M.A. Texas 1949. The Peruvian banking system 1954. *Texas.*

ROBERT EMMER, B.A. Ohio State 1939; M.A. Chicago 1940. Monetary and fiscal policy i Western Germany since the end of World War II. 1953. *Chicago.*

O. ROGERS FLYNN, JR., B.S. Columbia 1921; M.S. 1943. Capital funds as a factor in th deposit growth of commercial banks, 1940-1950. 1954. *Columbia.*

FRANK L. GREENWAY, M.B.A. Stanford 1940. An investigation into the problem of loa concentration and fund mobility within a branch banking organization. 1953. *Souther California.*

WARREN GUSTUS, S.B.C. North Carolina 1947; M.A. Brown 1950. The commercial bank as suppliers of capital in southern agriculture. 1954. *Chicago.*

GEORGE HORWICH, M.A. Chicago 1951. Open market operations, the rate of interest, an the price level, 1954. *Chicago.*

MARSHALL A. KAPLAN, B.S. Illinois Institute of Technology 1950; M.A. Chicago 195 Neoclassical monetary theory. 1954. *Chicago.*

DAVID KERLEY, B.A. North Carolina 1938; M.A. Louisiana State 1939. Money in Sout Carolina prior to commercial banking. *American.*

LEONARD J. KONOPA, B.A. Akron 1948; M.A. Pittsburgh 1949. Contribution of a com mercial bank to small business. 1953. *Pittsburgh.*

JAMES LONGSTREET, B.A. Antioch 1949; M.B.A. Northwestern 1950. The corporate struc ture of consumer finance companies. 1953. *Northwestern.*

JOSEPH W. MCGUIRE, Ph.B. Marquette 1948; M.B.A. Columbia 1950. The Federal Re serve Bank of San Francisco and the 12th Federal Reserve District 1930-1952. 195 *Columbia.*

THOMAS F. MCHUGH, B.S. Howard 1933. The use of Federal Reserve open market opera tions for fiscal purposes and monetary control, 1939-1950. *American.*

LAURIE S. ROBERTSON, M.A. Nebraska 1948. Commercial loan policy of banks and th structure of markets. 1955. *Michigan.*

AUBREY N. SNELLINGS, B.A. Virginia 1951; M.A. 1953. Postwar monetary developments i Germany. 1955. *Virginia.*

MORRIS L. STEVENS, B.A. Houghton 1941; M.A. Wisconsin 1949. Development of bank ing in the upper Mississippi Valley. 1954. *Wisconsin.*

KARL F. J. WITTRICH, JR., B.S. Columbia 1937; M.S. 1939. The development of com mercial banking in Allentown, Pennsylvania. 1954. *Columbia.*

PETE ZIDNAK, M.A. Southern California 1950. Arizona's small loan problem. 1954. *South ern California.*

Business Finance; Investments and Security Markets; Insurance

Degrees Conferred

KENNETH BLACK, JR., Ph.D. Pennsylvania 1953. An analysis of group annuities.

HASSAN A. EL-SHERIF, Ph.D. Chicago 1951. The changing nature of the sources and uses of business funds in Egypt.

LESTER GREENE, Ph.D. New York 1953. Financial aspects of inventory valuation methods.

LEWIS L. HERNDON, Ph.D. Illinois 1953. The timing of financial investment and capital formation.

WILLIAM I. LATOURETTE, Ph.D. New York 1953. Investment and financial aspects of the brewing industry.

JAMES W. LEONARD, D.C.S. Indiana 1952. Investment problems and policies of small life insurance companies.

POWELL NILAND, D.C.S. Harvard 1953. The effect of federal taxes upon the form of transaction in the acquisition of one company by another.

FRANCES K. NOVOTNY, Ph.D. New York 1952. Investment policies of insurance companies.

DONALD W. O'CONNELL, Ph.D. Columbia 1953. The insurability of credit risks.

DANIEL W. RAAF, Ph.D. Brown 1953. Treatment of security holders in financial standards employed by the Securities and Exchange Commission of Section 11 (b) of the Public Utility Holding Company Act of 1935.

DONALD W. SCOTTON, Ph.D. Illinois 1952. A study of the regulation of installment credit.

JOSEPH SOSHNIK, Ph.D. Nebraska 1952. A program to provide long-term capital for operations in small business.

CHESTER A. WILLIAMS, Ph.D. Columbia 1952. Experience and retrospective rating plans.

DOROTHY E. WATSON, Ph.D. Chicago 1952. An appraisal of life insurance as a medium for the small investor.

Theses in Preparation

JOHN M. BRIGGS, B.A. Maryville 1949; M.S. North Carolina 1950. Products liability insurance. 1953. *Wisconsin.*

KEITH L. BROMAN, M.B.A. Harvard 1947. Some effects of non-contributing pension plans on corporate financial policy. 1954. *Nebraska.*

ROBERT S. CLINE, B.A. Syracuse 1948; M.B.A. 1949. Valuation of life insurance assets. 1954. *Pennsylvania.*

JOHN A. CLINKENBEARD, B.A. Chicago 1947; M.B.A. 1947. Some qualitative and quantitative aspects of long term financing for industrial and public utility corporations from 1935 to 1951. *Chicago.*

CECIL R. GLAVES, B.S. Kirksville, Missouri State Teachers 1918; M.A. Chicago 1927. Investment policies of investment companies. *Chicago.*

GERALD E. GLEASON, B.S. Creighton 1948; M.A. Nebraska 1950. Trends of federal credit operations in Nebraska (1930-50). 1955. *Nebraska.*

ADOLPH E. GRUNEWALD, B.S. Wisconsin State 1949; M.S. Wisconsin 1951. The valuation of unquoted securities. 1955. *Wisconsin.*

ROY J. HENSLEY, B.S. Oregon 1942. Price policies in the insurance industry. 1955. *California.*

LEWIS L. HERNDON, B.A. Carleton 1950; M.A. Illinois 1951. The timing of financial investment and capital formation. 1953. *Illinois.*

RICHARD D. JOHNSON, B.A. Washington 1939. The measurement and significance of short-term liquidity in a going business enterprise. 1953. *Southern California.*

REUBEN KESSEL, M.B.A. Chicago 1948. Inflation, theory of wealth redistribution and application to private investment policy. 1953. *Chicago.*

LOUIS KUIPERS, B.A. Calvin 1941; M.B.A. Chicago 1947. An analysis of the financial structure of American stock fire insurance companies for the period 1938 to 1947 *Chicago.*

RICHARD E. LUNDQUIST, B.B.A. Minnesota 1945; M.B.A. Northwestern 1948. The concept and use of quasi-reorganization. 1953. *Minnesota.*

HARRIS J. NADLEY, B.S. Pennsylvania 1950; M.A. Harvard 1952. Theory of authority revenue bonds. 1954. *Harvard.*

GRANT M. OSBORN, B.S. Brigham Young 1948; M.B.A. Stanford 1950. Compulsory non-occupational disability insurance. 1954. *Pennsylvania.*

CLAYTON J. PILCHER, B.A. Michigan 1942; M.B.A. 1947. Corporate capital raising by the sale of convertible bonds and stocks in the post-World War II period. 1954. *Michigan.*

GIULIO PONTECORVO, B.A. Dartmouth 1946; M.C.S. 1947. Stock exchange history and practice. 1955. *California.*

CHARLES F. POSTON, B.Ed. Eastern Illinois State 1938; M.A. Illinois 1939. Stock options as a method of compensating corporate executives. 1954. *North Carolina.*

ROBERT M. STEVENSON, B.A. Duke 1937; M.A. Pennsylvania State 1947. Group catastrophe insurance. 1954. *Indiana.*

Public Finance

Degrees Conferred

LANG L. CANTRELL, Ph.D. Southern California 1953. Some basic modifications of American property taxation.

RUSSELL W. CASTLE, Ph.D. Pittsburgh 1952. Development of public utility taxation in West Virginia.

DONALD J. DALY, Ph.D. Chicago 1953. Estimating collections from the Canadian personal income tax.

AVON M. DREYER, Ph.D. Wisconsin 1952. Public finance in South Dakota.

RICHARD F. ERICSON, Ph.D. Indiana 1952. The taxation of investment companies in the United States.

ABDEL M. FAWZY, Ph.D. Kentucky 1953. A comparative study of gasoline taxes in the United States.

LENORE FRANE, Ph.D. Michigan 1953. Depreciation for tax purposes.

ROBERT FREEDMAN, Ph.D. Yale 1953. Budgetary effects of the operation of federal lending agencies.

BLAINE M. GORDON, Ph.D. Indiana 1953. The United States income tax treaty program.

RUDYARD B. GOODE, Ph.D. Virginia 1953. The distribution and disposition of highway funds in Virginia.

ROBERT S. HERMAN, Ph.D. New York 1952. Revenue estimating in New York state government.

WILLIE W. HILL, JR., D.C.S. Indiana 1952. Gross receipts taxation in Indiana.

JAMES E. JENSEN, Ph.D. Wisconsin 1953. Theory and measured analysis of the medical deduction.

DALE C. MARCOUX, Ph.D. Minnesota 1953. The level of the federal personal income tax exemption.

LAWRENCE B. MYERS, Ph.D. Wisconsin 1953. Taxation of income and property in Sweden.

FREDERICK PICARD, Ph.D. Syracuse 1953. The nature and operation of the Ohio retail sales tax.

LEON J. QUINTO, Ph.D. Columbia 1952. Municipal income taxation in the United States.

DONALD M. SOULE, Ph.D. Wisconsin 1953. Emergency excess profits taxation and proposed modifications.

FREDERICK D. STOCKER, Ph.D. Cornell 1952. Non-profit taxes as sources of local revenue.

I-SHUAN SUN, Ph.D. Wisconsin 1953. Salt taxation in China.

Theses in Preparation

ROBERT S. ADDEN, B.S. Citadel 1947; M.B.A. Pennsylvania 1948. The economic effects of the depreciation provisions of the federal income tax laws. 1954. *North Carolina.*

ARNOLD L. BARRETT, B.A. Georgia 1937; M.A. Virginia 1947. Some aspects of federal debt management. 1954. *Virginia.*

N. E. CARALOPOULOS, B.A. Athens 1946. Fiscal policy in Greece since 1930. 1954. *McGill.*

SIDNEY J. CLAUNCH, JR., B.A. Ohio 1949; M.A. Wisconsin 1951. The fiscal problems of suburban growth. 1954. *Wisconsin.*

GLENN W. FISHER, B.A. Iowa 1948; M.A. North Carolina 1950. State personal income tax jurisdiction. 1954. *Wisconsin.*

ROBERT N. HOWELL, B.S. Oklahoma A. & M. 1947; M.S. 1948. A critical study of certain aspects of the North Carolina income tax. 1954. *North Carolina.*

NORMAN H. JONES, JR., B.A. Lake Forest 1948; M.A. Iowa 1950. The regional redistribution effects of federal revenues and expenditures. 1954. *Iowa.*

VELDOR A. KOPITZKE, B.A. Wisconsin 1949; M.A. 1950. Anti-inflationary effects of taxes. 1955. *Wisconsin.*

HAROLD Q. LANGENDERFER, B.S. Miami 1949; M.B.A. Northwestern 1950. History of the federal income tax legislation of the Civil War period. 1954. *Indiana.*

WARREN A. LAW, B.B.A. Southern Methodist 1943; M.B.A. Harvard 1948; M.A. Harvard 1952. Tobacco taxation in the United States. 1953. *Harvard.*

ROBERT F. MELVILLE, B.A. Ohio Wesleyan 1950; M.A. Harvard 1952. A study in Massachusetts taxation. 1954. *Harvard.*

JOHN C. MILLER, B.S.C. Kansas State Teachers 1939; LL.B. Washburn School of Law 1941; M.A. Iowa 1950. Relation of fiscal and economic developments in Iowa—1929-1951. 1954. *Iowa.*

O. C. MILLER, B.S. George Peabody 1922; M.Ed. 1938; M.A. 1939. What are the financial problems in the support of public elementary junior high and high schools of the United States? *American.*

AHMED EL MORSHIDY, B.Agr. Fouad 1941. The unincorporated business tax in the United States, with special emphasis on New York. 1953. *Cornell.*

D. M. PATERSON, B.A. Toronto 1951; M.A. 1952. The financing of development of Ontario municipalities. 1954. *Toronto.*

JACKSON R. E. PHILLIPS, B.A. Texas 1942. Intergovernmental fiscal relations and the City of New York. 1953. *Columbia.*

OLIN S. PUGH, B.S. South Carolina 1948; M.A. Duke 1951. A critical survey of the views on public expenditure of selected economists of the classical period. 1954. *Duke.*

CHARLES RATTIFF, B.S. Davidson 1947; M.A. Duke 1951. The centralization of governmental functions in North Carolina. 1955. *Duke.*

EVERETT W. SCHADT, B.B.A. Boston 1932; M.A. Texas 1947. A case study in municipal finance. 1953. *North Carolina.*

WILBUR A. STEGER, B.S. Yale 1950; M.A. Harvard 1952. Averaging of income for income tax purposes. 1954. *Harvard.*

FANG-WEN WANG, B.A. National Chungking 1948; M.B.A. Northwestern 1951. The fiscal reforms of An-Shih Wang. 1954. *North Carolina.*

OTHEL D. WESTFALL, B.S. Oklahoma 1931; M.B.A. Northwestern 1947. Tax planning for estates under federal and Oklahoma laws. 1954. *Texas.*

JOHN A. WILKIE, B.A. Wisconsin 1940; M.A. Wisconsin 1950. Some aspects of state taxation of dividend and corporate income. 1953. *Wisconsin.*

International Economics

Degrees Conferred

WILLIAM R. ALLEN, Ph.D. Duke 1953. Modern American tariff debates and the trade agreements program.

A. ANASTASSIADES, Ph.D. Pittsburgh 1952. Export controls as a tool of national policy in the United States.

GRAYDON K. ANDERSON, Ph.D. Wisconsin 1953. Some economic inferences drawn from the record of the European recovery program.

WILLIAM N. BRESWICK, Ph.D. Texas 1953. Texas' stake in foreign trade.

CHRIS A. CARRAT, Ph.D. Florida 1953. A survey and economic evaluation of the foreign trade of Florida.

EDWARD J. CHAMBERS, Ph.D. Nebraska 1953. Argentina's postwar balance of payments

KUO-SUI L. CHANG, Ph.D. Illinois 1953. Changes in British commercial policy in the interwar period.

BETTY LOU CROSS, Ph.D. Illinois 1952. An international investment board for economic development.

NAZIH AHMED DEIF, Ph.D. Chicago 1952. The Egyptian trade balance.

HARRY C. MACC. EASTMAN, Ph.D. Chicago 1952. Canadian commercial policy since the war.

FRANZ GEHRELS, Ph.D. Stanford 1953. British balance of payments, 1945-1950.

MAURICE H. HELLNER, Ph.D. American 1953. United States oil import policy.

RICHARD S. LANDRY, Ph.D. Chicago 1952. Unfair competition in foreign trade.

ROBERT M. LICHTENBERG, Ph.D. Harvard 1953. Great Britain's balance of payments, 1868-1912.

GERALD M. MEIER, Ph.D. Harvard 1953. Some international aspects of economic development, 1870-1913.

HENRY A. PECK, Ph.D. Fletcher School of Law and Diplomacy 1952. Freedom, planning and international trade.

RICHARD PERLMAN, Ph.D. Columbia 1953. Balance of payments problems of developing countries.

RALPH B. PRICE, Ph.D. Colorado 1952. Post-war multilateral clearing agreements and their contribution to European economic equilibrium.

CHARLES McK. RAMSEY, Ph.D. Harvard 1953. The international trade of the United Kingdom, 1914-1925.

IRVING A. SIRKEN, Ph.D. Harvard 1953. Fluctuations in Canadian foreign exchange reserves, 1946-50: A study in balance of payments adjustment & foreign economic policy.

Theses in Preparation

STEN H. BERG, University College of Commerce, Stockholm, 1946. Sweden and the Marshall Plan. 1955. *California.*

DAVID KHENG-GWAN CHAN, B.A. Stanford 1950; M.A. Virginia 1953. Elasticities of supply and demand of rice in Southeast Asia. 1955. *Virginia.*

FRANK C. CHILD, B.A. Utah 1941; M.A. Stanford 1947. German exchange control in the inter-war period—a study in economic exploitation. 1954. *Stanford.*

RALPH K. COWAN, M.A. Michigan 1952. The Canadian balance of international payments, 1926-1953. 1955. *Michigan.*

MORRIS CRAWFORD, M.A. Chicago 1951. The French balance of payments and international stability, 1948-50. 1954. *Chicago.*

WILLARD B. DOXEY, B.S. Utah 1937; M.S. 1947. United States dried fruit in international trade. 1955. *California.*

RICHARD S. ECKAUS, B.S. Iowa (Ames) 1946; M.A. Washington (St. Louis) 1948. Dynamic models of international trade. 1954. *Massachusetts Institute of Technology.*

MERL L. FARMER, B.S. Idaho 1937; M.A. Chicago 1951. The relative merits of the "project approach" and the "general assistance approach" in international investment in undeveloped areas. 1954. *Illinois.*

HERBERT H. GLANTZ, B.S.S. City (New York) 1940. Post-war stabilization objectives in intergovernmental commodity agreements: case studies of tin and wheat. *American.*

ABNER GOLDSTEIN, B.S. Northwestern 1950. Inventory cycles and international equilibrium. 1954. *Massachusetts Institute of Technology.*

A. M. M. MOAZZAMUL HUQ, B.A. Dacca 1949. The international aspects of U.S. demand for industrial raw materials. 1954. *Harvard.*

GEORGE M. IWANAKA, B.A. Hamline 1945; M.A. Ohio State 1947. Postwar Germany and the multilateral trade pattern. 1954. *Wisconsin.*

MORDECHAI E. KREININ, M.A. Michigan 1952. Stabilization funds: their past and future. 1955. *Michigan.*

PEDRO C. LEAÑO, B.S. Kansas 1938; M.B.A. California 1950. The balance of payments problem of the Philippine republic. 1954. *Chicago.*

JOHN C. MURPHY, B.A. North Texas State Teachers 1943; M.A. Chicago 1949. Long term contracts for the export of Denmark's butter and bacon. 1954. *Chicago.*

DONALD K. PALMER, B.S. Georgetown 1948; M.P.A. Harvard 1951. External capital problems of the sterling area. 1954. *Harvard.*

A. A. PRESBER, B.A. Humboldt (Berlin) 1949; M.A. Toronto 1952. The Schuman Plan: an advance in international law. 1954. *Toronto.*

RONALD M. REIFLER, M.B.A. Chicago 1948. Post World War II barriers to American investment in British colonial Africa. *Chicago.*

RUDOLPH R. RHOMBERG, M.A. Yale 1950. Canada's U.S. dollar problem and her economic policy. 1954. *Yale.*

ROMNEY ROBINSON, B.A. McMaster 1947; M.A. Toronto 1948. Aspects of moncpolisi competition in international trade. 1954. *Massachusetts Institute of Technology.*

JOEL W. SAILORS, JR., B.A. Texas. Comparison of terms of trade as between sevei countries. 1954. *Texas.*

BERNARD F. SLIGER, B.A. Michigan State 1949; M.A. 1950. An analysis of the forei; trade of Michigan. 1953. *Michigan State.*

JULIUS B. SPIRO, B.A. Brooklyn 1932; M.A. Columbia 1933. The causes of disequilibriu in the British balance of payments during the post war period. *American.*

CHARLES E. STALEY, B.A. Kansas 1950. Export taxes: a problem in international economi and economic development. 1954. *Massachusetts Institute of Technology.*

LAWRENCE STARLIGHT, B.A. Dartmouth 1950; M.A. Harvard 1952. British-Spanish tra relations, 1888-1950. *Harvard.*

CHI TSU WANG, B.A. National Central Political University 1946; M.A. Missouri 19! Post-war developments in the trade of principal commodities in Southeast Asia a their balance of payments effects. 1953. *Illinois.*

ROGER WEISS M.A. Chicago 1951. Exchange control in Britain 1939-52. 1953. *Chicag*

DAVID A. WILSON, B.A. British Columbia 1947; B.S. 1948. An analysis of British Columb exports of softwood lumber. 1954. *California.*

KENNETH M. WRIGHT, B.A. Wooster 1949; M.A. Columbia 1950. The post-war sterli area. 1955. *Columbia.*

Business Administration

Degrees Conferred

JEAN R. ANDERSON, Ph.D. Harvard 1953. The marketing of non-food products in Puer Rico.

JESSE B. ALLEN, Ph.D. Chicago 1952. A comparison of the marketing of alcoholic beve ages under state monopoly and open license systems.

JIM G. ASHBURNE, Ph.D. Texas 1953. Accounting reports for financial and operati management (a study of practices in the petroleum industry).

ALTON W. BAKER, Ph.D. Ohio State 1952. An analysis of personnel management in select small industrial plants in Ohio.

E. ROBERT BARLOW, D.C.S. Harvard 1953. Management and control of foreign subsi aries.

DILLARD E. BIRD, Ph.D. Ohio State 1953. The relation of stabilization within the busin organization to guarantees of work or wages.

GRANT H. CALDER, D.C.S. Indiana 1953. Some problems of selected small family-co trolled manufacturing businesses.

VEN-KAI (VICTOR) CHOU, Ph.D. Wisconsin 1952. An analysis of the applicability a effectiveness of retail profit sharing.

C. ROLAND CHRISTENSEN, D.C.S. Harvard 1953. Management succession in small a growing enterprises.

KEITH DAVIS, Ph.D. Ohio State 1952. Channels of executive communication.

WILLIAM H. DAY, Ph.D. Ohio State 1953. The marketing of colorizer paint.

HORACE J. DEPODWIN, Ph.D. Columbia 1953. Corporate tax liabilities.

JAMES D. EDWARDS, Ph.D. Texas 1953. Some significant developments of public accou ing in the United States.

Isadore Fine, Ph.D. Columbia 1952. Retail trade area measurement techniques applied to Fort Atkinson, Baraboo and West Bend.

Edwin B. Flippo, Ph.D. Ohio State 1953. An analysis of methods used to maintain and sustain employee profit sharing plans in selected companies.

Roland W. Funk, Ph.D. Chicago 1951. Theoretical foundations for inventory accounting.

Fredric H. Glade, Ph.D. New York 1952. An examination of the economic and social functions of the advertising agency.

Oscar R. Goodman, Ph.D. Wisconsin 1953. Forecasting methods used in sales planning.

Lester Greene, Ph.D. New York 1953. Financial aspects of inventory valuation methods.

Charles H. Griffin, Ph.D. Texas 1953. Petroleum refinery accounting.

James H. Healey, Ph.D. Pennsylvania 1953. An analysis of the span of control and selected coordinating and control media employed by chief executives of Ohio manufacturing companies.

Cyril C. Herrmann, D.C.S. Harvard 1953. Problems of new businesses developing new products.

Robert G. James, Ph.D. Harvard 1953. The effect of inflation on the determination of depreciation.

Charles E. Marberry, Ph.D. Illinois 1952. Income administration policies of industrial corporations.

Martin V. Marshall, D.C.S. Harvard 1953. The problems and limitations of vending.

Stuart W. McFarland, Ph.D. Pittsburgh 1952. The marketing operations of industrial distributors, with particular reference to the Cleveland, Ohio, area.

Ishmael E. McNeill, Ph.D. Texas 1953. Accounting for the finding, production, and processing of natural gas.

Robert Myers, D.C.S. Indiana 1952. Contests and awards for motivation of salesmen.

Carter C. Osterbind, Ph.D. American 1953. An appraisal of the usefulness of partial equilibrium theory in marketing research and analysis.

James M. Owen, Ph.D. Louisiana State 1953. An analysis of the traditional accounting treatment of deferred charges.

Gerald F. Price, Ph.D. Pittsburgh 1953. Retail store mortality in Denver, Colorado.

Karl H. Rahdert, D.C.S. Indiana 1952. Criteria for raw materials inventory control.

Melvin E. Salveson, Ph.D. Chicago 1952. On a rational and quantitative method of production planning and scheduling.

Marvin Tummins, Ph.D. Louisiana State 1953. The use of the Poisson distribution by the auditor.

Paul A. Vatter, Ph.D. Pennsylvania 1953. Structure of retail trade by size of store—an analysis of 1948 census data.

Elmer R. Young, Ph.D. Columbia 1953. Some important distribution cost accounting theories and practices.

Theses in Preparation

Joseph K. Bailey, B.A. and B.S. Salem 1934; M.B.A. Texas 1948. Making the foreman a vital part of the management group at Kelly Air Force Base, Texas. 1954. *Texas.*

Robert W. Barclay, B.A. Indiana 1948; M.B.A. 1949. Ways of evaluating the personnel function. 1954. *Indiana.*

Richard O. Been, B.A. George Washington 1937; M.A. 1939. An appraisal of methodolog in marketing research. 1954. *California.*

Edward H. Bowman, B.S. Massachusetts Institute of Technology 1948; M.B.A. Pennsy vania 1949. Organizational problems in executive job evaluation and salary administr tion. 1954. *Ohio State.*

Virgil E. Boyd, B.A. Iowa Teachers 1943; M.B.A. Northwestern 1948. Price level adjus ments on financial statements. 1954. *Northwestern.*

Horace R. Brock, B.S. Sam Houston 1946; B.B.A. 1951; M.A. 1951. Accounting fc the production of crude oil. 1954. *Texas.*

Richard L. Brummet, B.Ed. Illinois State Normal 1942; M.S. Illinois 1947. Accountin recognition and managerial uses of fixed and variable cost classifications. 1954. *Michiga*

Clifford D. Clark, B.A. Kansas 1948; M.A. Chicago 1950. The age distribution of ir vestment in capital goods. 1953. *Chicago.*

Robert H. Cojeen, B.B.A. Michigan 1946; M.B.A. 1947. Personal problems in the d centralized branch plant. 1954. *Indiana.*

Newel W. Comish, B.S. Oregon 1946; M.S. 1947. Markdowns in department stores. 195 *Ohio State.*

Jay D. Cook, Jr., B.A. Washington & Lee 1943; M.B.A. Pennsylvania 1948. Cost prob lems of the state "sales below cost" acts. 1954. *Ohio State.*

John W. Coughlan, B.A. Alberta 1948; M.A. Western Ontario 1952. Financial stat ments and price levels. 1954. *Johns Hopkins.*

Kenneth R. Davis, Ph.B. Wisconsin 1946; M.B.A. 1947. Marketing by househol furniture manufacturers: a critical evaluation. 1954. *Chicago.*

Robert E. Dillon, B.S. Massachusetts 1947; M.B.A. Ohio State 1948. The exclusiv agency as a method of distribution. 1954. *Ohio State.*

George A. Edwards, B.A. Western Ontario 1947; M.Comm. Toronto 1949. Marketin problems in an infant industry. 1954. *Columbia.*

Abdel Aziz El-Sherbini, B.Comm. Fouad 1948; M.B.A. Chicago 1951. Behavior norm in the consumer market. 1954. *Iowa.*

Leo G. Erickson, B.S.C. Iowa 1948; M.A. 1952. An analysis of national income data a applied to sales forecasting. 1954. *Iowa.*

Warren W. Etcheson, B.S. Indiana 1943; M.A. Iowa 1951. Marketing adjustments t factor price changes in the food industry. 1954. *Iowa.*

Arthur Highman, B.S. Armour Institute of Technology 1935; M.B.A. Chicago 193 Self administered questionnaires as a technique for measuring the market position of brand: a critical appraisal. 1954. *Chicago.*

Bob R. Holdren, B.A. Indiana 1948; M.A. 1949. An economic analysis of a retail foo market: study of grocery stores in Anderson, Indiana. 1954. *Yale.*

Ralph C. Hook, Jr., B.A. Missouri 1947; M.A. 1948. Problems in the marketing of use agricultural machinery. 1954-55. *Texas.*

James M. Hund, B.A. Amherst 1943; M.A. Princeton 1951. A case study in manageri decision-making. 1954. *Princeton.*

Allen F. Jung, B.A. Loyola 1942; M.A. 1944; M.B.A. Chicago 1947. Small town reta buying. 1954. *Chicago.*

E. W. Kierans, B.A. Loyola. The theory of business organization. 1953. *McGill.*

Peter S. King, B.S. Michigan 1947; M.B.A. 1948. Retail markup variations and the determinants. 1954. *Michigan.*

MAYBELLE KOHL, B.A. Wisconsin 1932; M.A. Northwestern 1938. The role of accounting in price fixing. 1954. *Columbia.*

SAM A. D. LEIFESTE, B.A. Southwestern 1926; M.A. Texas 1929. Characteristics of the Latin-American market in Texas. 1954-55. *Texas.*

ROY D. MACTAVISH, B.A. Juniata 1936; M.A. Pittsburgh 1938. Executive development: an evaluation of the Bigelow Institute of Industrial Management. 1953. *Cornell.*

ROBERT B. MCCOSH, B.S. Kansas State Teachers 1936; M.S. Denver 1944. Internship programs in accounting: an analysis and evaluation. 1954. *Indiana.*

PHILLIP MOVEY, B.A. Municipal Wichita 1942; M.B.A. Harvard 1947. Employee benefits for outside salesmen. 1954. *Ohio State.*

PHILIP T. MEYERS, B.S. Oklahoma A. & M. 1948; M.S. 1951. Cost concepts and reports as they affect managerial decisions. 1954. *Texas.*

DONALD F. MULVIHILL, B.S. Illinois 1933; M.A. Chicago 1937. A research approach to expanding sales through market communication: a case study. 1954. *Chicago.*

KENNETH H. MYERS, B.A. Harvard 1947; M.B.A. 1949. The marketing problems of a major firm in a capital goods industry, 1880-1950. 1954. *Northwestern.*

WILLIAM A. PATON, JR., B.A. Michigan 1949; M.B.A. 1951. The effect of inflation on the measurement of corporate income—with emphasis on the monetary items. 1954. *Michigan.*

JOHN K. PFAHL, B.A. Pennsylvania State 1947; M.B.A. 1949. An analysis of concentration in retailing. 1953. *Ohio State.*

JEAN T. PUMROY, B.S.C. Iowa 1949; M.A. 1950. The express warranty as an aspect of marketing policy. 1954. *Iowa.*

JOHN J. RATH, B.S. Detroit 1938; M.B.A. New York 1939. A study of the methodology of pricing policies and practices in the machine tool industry. 1955. *Michigan.*

ROBERT S. RAYMOND, B.S. Kansas 1934; M.B.A. 1951. A study of the economics of wool grease recovery in the United States, with special reference to marketing. 1954. *Ohio State.*

DONALD E. ROARK, B.S.C. De Paul 1944; M.B.A. Wisconsin 1950. Study of federal income tax problems of real estate developers. 1954. *Indiana.*

HARRY V. ROBERTS, B.A. Chicago 1943; M.B.A. 1947. Some suggestions for more effective use of marketing research. 1954. *Chicago.*

DAVID J. SCHWARTZ, JR., B.S. Nebraska 1948; M.B.A. Ohio State 1949. Evaluation of the sales training programs of selected life insurance companies. 1953. *Ohio State.*

MARTIN L. SHOTZBERGER, B.S. Richmond 1948; M.S. 1949. Stability and flexibility in department store organization. 1954. *Ohio State.*

FRANK A. SINGER, B.S. Indiana 1948; M.B.A. 1949. A summary and evaluation of selected terms of variable usage in financial accounting. 1954. *Indiana.*

JOHN D. STANLEY, B.A. Harvard 1948; M.B.A. Indiana 1950. The informal organization as a management problem. 1954. *Indiana.*

J. RICHARD STEVENS, B.S.C. Iowa 1940; M.A. 1951. The impact of marketing research upon the conduct of manufacturers advertising. 1954. *Iowa.*

WAINO W. SUOJANEN, B.S. Vermont 1942; M.B.A. Harvard 1946. Liquidity, growth, and the organization of the firm. 1954. *California.*

ALBERT G. SWEETSER, B.A. Harvard 1937. Integration of business studies curriculum. *American.*

DONALD A. TAYLOR, B.A. Western Ontario 1947; M.B.A. Michigan 1949. Some aspects of the use of certification marks in the marketing of consumer goods and services. 1954. *Michigan.*

Bertram L. Trillich, B.S. Northwestern 1938; M.S. Arizona 1939; M.B.A. Harvard 1941. Buying practices of certain Texas department stores. 1954. *Ohio State.*

Vernon H. Upchurch, B.B.A. Oklahoma 1942; M.B.A. 1947. Contributions of G. Charter Harrison to the development of cost accounting. 1954. *Texas.*

Samuel M. Woolsey, B.A. Texas 1931; M.B.A. 1933; M.B.A. Harvard 1935. Criteria of materiality in accounting. 1954. *Texas.*

Theodore R. Yantis, B.A. Otterbein 1947; M.B.A. Ohio State 1948. A marketing study of the prefabricated housing industry. 1954. *Ohio State.*

Industrial Organization; Public Regulation of Business

Degrees Conferred

Harold J. Barnett, Ph.D. Harvard 1953. Atomic energy in the U.S. economy—a consideration of certain industrial, regional, and economic development aspects.

Cecil M. Birch, Ph.D. Toronto 1953. A revised classification of the forms of competition with application to the molded plastics industry.

David W. Bluestone, Ph.D. American 1953. The problem of competition among domestic trunk airlines.

Arthur T. Dietz, Ph.D. Princeton 1953. An analysis of decrees under the Sherman Act.

Hugh K. Hawk, Ph.D. Virginia 1953. United States economic policy and the aluminum industry.

William H. Hohmann, Ph.D. St. Louis 1953. The large business corporation as a socio-economic institution.

Harry T. Koplin, Ph.D. Cornell 1952. Certification criteria under the Natural Gas Act.

Glenn A. Lehmann, Ph.D. Harvard 1953. The market for sulfur: a study in duopoly.

Harvey J. Levin, Ph.D. Columbia 1952. Cross-channel ownership of mass media: a study in social valuation.

Boyd L. Nelson, Ph.D. Wisconsin 1953. Direct governmental aids to business.

John H. Nixon, Ph.D. Harvard 1953. Government control of lumber prices in World War II.

Almarin Phillips, Ph.D. Harvard 1953. Capacity: a study in inter-industry economics.

Gideon Rosenbluth, Ph.D. Columbia 1952. Industrial concentration in post-war Canada.

Edward G. Schiffman, Ph.D. Harvard 1953. The food and agriculture policies and programs of U.S. military government in post-war Germany; beginning of occupation to 30 June 1949.

Richard U. Sherman, Jr., Ph.D. Harvard 1953. The formulation of military requirements for munitions and raw materials.

Gilbert N. Smith, Ph.D. Nebraska 1952. The changing attitude of the federal government toward competition and monopoly, 1911-1933.

Theses in Preparation

Seneca Eldredge, B.A. Amherst 1948. American Merchant Marine policy 1936-1953. 1954. *Columbia.*

Vincent A. Fulmer, B.A. Miami 1949. The pricing of U.S. Postal services. 1954. *Massachusetts Institute of Technology.*

BENJAMIN GOLDBERG, B.S. St. Johns 1934; M.A. New York 1938. A case study in price control during the Korean emergency—the petroleum industry in the U.S.A. *American.*

DANIEL C. HAMILTON, B.A. Harvard 1941; M.B.A. 1943. Price-output relations in oil refining; some aspects of the competitive concept and public policy. 1954. *Columbia.*

JOSEPH G. HATTERSLEY, B.A. California 1947. The expropriated Mexican oil industry—some economic aspects. 1955. *California.*

FRANK L. HENDRIX, B.S. Tennessee 1949; M.S. 1950. Monopoly power in the newsprint industry. 1954. *North Carolina.*

JAMES E. HIBDON, B.A. Oklahoma 1948; M.A. 1949. The Tennessee Valley Authority: an economic evaluation. 1954. *North Carolina.*

PHILIP A. KLEIN, B.A. Texas 1948; M.A. 1949. Efficacy of anti-trust regulation. 1955. *California.*

ROBERT O. LAW, B.A. Denver 1946; M.B.A. Southern California 1949. Some suggestions for a re-evaluation of governmental policy relating to price discrimination in view of the pricing function of marketing executives. 1954. *Chicago.*

JOHN A. MENGE, B.A. Idaho 1949. Methods and consequences of internal pricing in vertically integrated firms. 1953. *Massachusetts Institute of Technology.*

DAVID C. MOTTER, B.A. Baldwin-Wallace 1949. The effect of World Wars I and II on "industrial bigness." 1954. *Vanderbilt.*

WILLARD F. MUELLER, B.S. Wisconsin 1950; M.S. 1951. Du Pont: a case study of patterns of industrial growth. 1954. *Vanderbilt.*

RALPH L. NELSON, B.S. Minnesota 1950; M.A. Columbia 1953. The merger movement in the United States, 1904-1919. 1955. *Columbia.*

WILLIAM PANSCHAR, B.S. Northwestern 1949. Competition and pricing in the baking industry. 1954. *Northwestern.*

CHARLES L. QUITTMEYER, B.A. William and Mary 1940; M.B.A. Harvard 1947. The Chesapeake Bay seafood industry: a study in private management and public policy. 1954. *Columbia.*

HARRY L. SHADLE, B.S.C. Simpson 1934; M.A. Iowa 1940. Federal taxes and the business structure. 1954. *Iowa.*

ELTON TEKOLSTE, B.S. Nebraska 1943; M.A. 1948. Accounting, economic and financial implications of Section 102 of the Internal Revenue Code. 1954. *Michigan.*

DAVID A. THOMAS, B.A. Texas Technological 1937; M.B.A. Texas Christian 1948. Plant facilities in a defense economy. 1955. *Michigan.*

Public Utilities; Transportation; Communications

Degrees Conferred

MILTON S. BAUM, Ph.D. Southern California 1953. The economics of air cargo transportation.

PAUL B. BLOMGREN, D.C.S. Indiana 1952. Passenger traffic deficit in railroads.

JOHN H. DALES, Ph.D. Harvard 1953. The hydro electric industry in Quebec, 1898-1940.

ROBERT S. EINZIG, Ph.D. Michigan 1953. Civil Aeronautics Board control over domestic routes and competition, 1938-52.

HUBERT H. FISINGER, Ph.D. Michigan 1953. Michigan state highway expenditure policy.

JOHN W. FREDRICKSON, Ph.D. Chicago 1953. American shipping and foreign commerce.

John L. Hazard, Ph.D. Texas 1953. Elements in the crises in Atlantic-Gulf coastal shipping.

Wallace I. Little, Ph.D. Wisconsin 1952. The determination of subsidies to motor carriers through highway cost allocation.

Lee J. Melton, Jr., Ph.D. Louisiana State 1953. A re-examination of contract carrier regulation and exempt provisions of the Motor Carrier Act of 1935, and their impact on common carrier.

Merton H. Miller, Ph.D. Johns Hopkins 1953. Price discrimination in the railway industry.

Howard W. Nicholson, Ph.D. Harvard 1953. An analysis of modern highway development policies in the Middle Atlantic states.

Merrill J. Roberts, Ph.D. Chicago 1952. The intercity travel market of the United States.

Leland S. Van Scoyoc, D.C.S. Indiana 1953. History, development, and economic importance of the Chicago, Indianapolis, and Louisville Railroad Co.

William M. Zentz, Ph.D. Michigan 1953. The economic effects of forced geographic integration of electric utility holding companies.

Charles F. Ziebarth, Ph.D. Chicago 1952. Divisions of interline railroad freight rates.

Theses in Preparation

John E. Altazan, B.A. Louisiana State 1950; M.B.A. 1951. Economic aspects of restriction of entry into the motor carrier industry. *Illinois.*

E. V. Bowden, B.A. Connecticut 1950; M.A. Duke 1952. The development of the electric power policy of the federal government, 1920-1953. 1954. *Duke.*

Wayne G. Broehl, B.S. Illinois 1947; M.B.A. Chicago 1950. The history of the Norwalk Truck Line Company. 1954. *Indiana.*

Philip M. Carroll, B.S. Illinois 1949; M.S. 1951. Highway modernization in the postwar period in certain selected states. 1954. *Illinois.*

Burton Crandall, B.A. California 1928; M.B.A. Harvard 1930. Nationwide organization in the intercity bus industry. *American.*

Ralph K. Davidson, B.A. Oxford 1950; M.A. Johns Hopkins 1953. Price discrimination in gas and electric utility rates. 1954. *Johns Hopkins.*

George M. Dougherty, Jr., B.A. Harvard 1936; M.B.A. Pennsylvania 1939. History of the Association of American Railroads. 1954. *Pennsylvania.*

M. I. Foster, B.A. Miami 1950; M.A. 1951. Nature of the demand for electric light and power. 1953. *Florida.*

Paul J. Garfield, B.S. Wisconsin 1948; M.S. 1949. Recent developments in the regulation of public utilities in Wisconsin. 1954. *Wisconsin.*

Warren S. Gramm, B.A. Washington 1944; M.A. 1948. Electric power industry. 1955. *California.*

Mohamed A. Katabi, B.B.A. Beirut 1948; M.A. Cincinnati 1950. Economic importance of oil pipelines in the Middle East. *American.*

Charles E. Miller, Jr., B.S. Pennsylvania 1943; M.B.A. 1947. Study of anthracite sales and rates on competing fuels to major markets. 1954. *Illinois.*

Sidney L. Miller, Jr., B.A. Stanford 1941; M.A. 1949. Economics of freight forwarding. 1953-54. *Pennsylvania.*

ROBERT D. PASHEK, B.A. Central Washington 1949; M.A. Iowa 1950. An economic analysis of freight forwarding industries. 1954. *Illinois.*

EDWARD W. SMYKAY, B.S. Rutgers 1948; M.S. Maine 1952. The National Association of Railway and Public Utility Commissioners as the originators and promoters of public policy for public utilities. 1955. *Wisconsin.*

CHARLES M. WINSTON, B.A. Minnesota 1941. The performance and regulation of electric power utilities in Missouri. 1954. *Yale.*

WALLACE O. YODER, B.S. Iowa 1928; M.A. 1929. The problem of the Railway Express Co. 1954. *Indiana.*

Industry Studies

Degrees Conferred

FREDERICK E. BALDERSTON, Ph.D. Princeton 1953. Scale, vertical integration and costs in residential construction firms.

PAUL W. COOK, JR., Ph.D. Chicago 1952. The economic basis and effect of the development of synthetic liquid fuel processes.

LESLIE COOKENBOO, JR., Ph.D. Massachusetts Institute of Technology 1953. Economies of scale in the operation of crude oil pipe lines.

JOHN S. EWING, D.C.S. Harvard 1953. The history of the Bigelow-Sanford Carpet Company, Incorporated, from 1914-1951.

ROBERT W. HAIGH, D.C.S. Harvard 1953. The participation of the small refiner in the oil industry.

MARY LEE M. INGBAR, Ph.D. Harvard 1953. The factors underlying the relationship between cost and price: a case study of a textile firm.

JOHN V. KRUTILLA, Ph.D. Harvard 1953. The structure of costs and regional advantage in primary aluminum production.

OSCAR W. MAIN, Ph.D. Toronto 1953. The Canadian nickel industry 1885-1939.

WILLIAM McK. MERRILL, Ph.D. Illinois 1953. Economics of the Southern smokeless coals.

GERTRUDE G. SCHROEDER, Ph.D. Johns Hopkins 1953. The growth of the major basic steel companies, 1900-1948.

Theses in Preparation

KENNETH O. ALEXANDER, B.A. Michigan 1949. Extent of pattern bargaining in autos and parts. 1954. *Massachusetts Institute of Technology.*

PAUL H. BANNER, B.A. Michigan 1941; M.P.A. Harvard 1951. Competition in the automobile industry. 1953. *Harvard.*

GORDON K. DOUGLASS, B.A. Pomona 1950. Some monopolistically competitive aspects of American moving pictures in international trade. 1954. *Massachusetts Institute of Technology.*

VIRGINIA G. FLAGG, B.A. California (Los Angeles) 1947. Innovations and the business cycle: a case study of the automobile industry. 1955. *California.*

ALFRED O. GINKEL, B.A. Rochester 1944; M.S. 1946. Invention and innovation in the graphic arts industry, 1930-1950. 1954. *Massachusetts Institute of Technology.*

GERALD GOLD, B.S. City (New York) 1948; M.A. Washington 1949. Economic analysis of fats and oils industry in the United States. 1955. *Columbia.*

LELAND S. LIANG, B.T.E. Lowell Textile Institute 1942; B.A. Harvard 1943. Problems of the cotton manufacturer in China. 1954. *Pennsylvania.*

EUGENE W. SCHOOLER, B.S. Fort Hays Kansas State 1943; M.B.A. Kansas 1948. Petrochemicals industry. 1954. *Harvard.*

JACQUES J. SINGER, B.S. New York 1950. Technological development and vertical integration in the iron and steel industry. 1954. *Massachusetts Institute of Technology.*

JOHN S. WRIGHT, Ph.B. North Dakota 1942; M.B.A. Southern California 1949. Th development of policies affecting the marketing operations of the Jewel Tea Compan Inc. 1901-1951. 1954. *Ohio State.*

Land Economics; Agricultural Economics; Economic Geography

Degrees Conferred

WALTON ANDERSON, Ph.D. Chicago 1952. The efficiency of British Columbian and Canadia agriculture.

CHESTER B. BAKER, Ph.D. California 1953. Government participation in the supply o short-term credit for agriculture.

JAMES W. BIRKHEAD, Ph.D. Harvard 1953. Capital and labor use on tobacco-cotton farm in the Carolinas.

CHARLES BISHOP, Ph.D. Chicago 1952. Unemployment of labor in agriculture: Southeastern United States.

ARNOLD BREKKE, Ph.D. Minnesota 1952. Development of agricultural policy.

DAVID W. CARR, Ph.D. Harvard 1953. The economics of preparing wool for market an manufacture.

EMERY N. CASTLE, Ph.D. Iowa (Ames) 1952. Adaptation of the farm firm in Wester Kansas to conditions of uncertainty.

ROBERT I-NIEN CHIEN, Ph.D. Minnesota 1953. A study of tung oil price and its demand

WILLIAM DARCOVICH, Ph.D. Iowa (Ames) 1952. Application of expectation models t livestock products.

ABDEL H. F. EL-ATTAR, Ph.D. Iowa (Ames) 1952. Yield and price expectations for primary agricultural production.

IRVING FELLOWS, Ph.D. Iowa (Ames) 1952. Returns to scale in potato farming.

ALAN S. GOLDMAN, Ph.D. Iowa (Ames) 1953. Efficiency of marketing eggs in Des Moines

ROGER W. GRAY, Ph.D. Minnesota 1952. An economic analysis of the impact of the pric support program upon the development of the potato industry in the United States

GUSTAV R. GREGORY, Ph.D. California 1953. Developing economic growth goals for fores production.

KENNETH R. GRUBBS, Ph.D. Texas 1953. Patterns of agricultural development in th western cross timbers region of Texas during the last century.

PEGGY HEIM, Ph.D. Columbia 1953. Financial aspects of federal irrigation, 1902 to 193C with emphasis upon the development of repayment policy.

ROYER B. HELD, Ph.D. Iowa (Ames) 1953. Overcoming obstacles to soil erosion control i Western Iowa.

WILLIAM E. HENDRIX, Ph.D. Wisconsin 1953. Achievement of farm ownership by tenant and share-croppers in the Piedmont in Georgia.

MELVIN R. JANSSEN, Ph.D. Harvard 1953. Integration of capital and labor on cash grai markets.

SAUL M. KATZ, Ph.D. Harvard 1953. Western European agricultural policy in the light o contemporary economic trends.

JOHN A. KINCANNON, Ph.D. Texas A. & M. 1952. An economic analysis of the Texas swine industry.

DALE A. KNIGHT, Ph.D. Chicago 1952. Selected agricultural problematic production situations.

STANLEY KRAUSE, Ph.D. Minnesota 1952. The marketing and pricing of Minnesota creamery butter.

JOHN M. KUHLMAN, Ph.D. Wisconsin 1953. The problem of regional development in the Wisconsin headwaters country.

GORDON D. MACDONALD, Ph.D. New York 1952. A community study of Yorkville (Upper East Side Manhattan, New York).

R. M. MACINTOSH, Ph.D. McGill 1952. The finance of housing in Great Britain, 1919-49.

WILLIAM H. MIERNYK, Ph.D. Harvard 1953. Labor cost and labor supply as determinants of industrial location.

CHARLES MOELLER, Ph.D. New York 1953. The secondary market for home mortgages in the United States: 1925-1952.

JAMES M. NIELSON, Ph.D. Harvard 1953. Application of the budget method in farm planning.

HOWARD W. OTTOSON, Ph.D. Iowa (Ames) 1952. Economics of forage production and utilization in Dakota and Dixon counties, Nebraska.

MAURICE F. PERKINS, Ph.D. Harvard 1953. Long-trend and intermediate fluctuations in raw materials prices and production.

CHESTER E. PETERS, Ph.D. Wisconsin 1953. An analysis of land use programming in Northern Wisconsin.

EVERETT E. PETERSON, Ph.D. Chicago 1952. Administered pricing of fluid milk.

CHESTER A. RAPKIN, Ph.D. Columbia 1953. An approach to the study of the movement of persons and goods in urban areas.

JOHN C. REDMAN, Ph.D. Kentucky 1951. Economic considerations of grain-roughage substitution in feeding for milk production.

JACK D. ROGERS, Ph.D. Massachusetts Institute of Technology 1953. Flexibility in the housebuilding industry: the San Francisco Bay area case.

B. A. ROGGE, Ph.D. Northwestern 1953. Wage policy and the location of industry.

WALDO S. ROWAN, Ph.D. Wisconsin 1953. Marketing and pricing practices in the Georgia broiler industry.

SOLOMON SINCLAIR, Ph.D. Minnesota 1953. The role of subsidies in farm mortgage credit.

VERNON L. SORENSON, Ph.D. Minnesota 1953. A study of the nature and cost of government programs affecting potatoes and their impact on inter-market relationships.

GEORGE P. SUMMERS, Ph.D. Minnesota 1953. An economic study of the price support and control program for burley tobacco.

WILBUR R. THOMPSON, Ph.D. Michigan 1953. The measurement of industry locational patterns.

ARTHUR E. WARNER, D.C.S. Indiana 1953. Financing construction of prefabricated houses.

FRED H. WIEGMANN, Ph.D. Iowa (Ames) 1953. Comparison of costs of service and self-service methods of selling meat in retail food stores.

Theses in Preparation

MAURICE C. BENEWITZ, B.A. Harvard 1947. Economic factors in geographical migration to St. Paul, Minnesota, 1940-1950. 1953. *Minnesota.*

JOHN T. BENNETT, B.A. Harvard 1950; M.S. California 1952. Economic analysis of marketing agreements in the cling peach industry. 1954. *California.*

NORRIS A. BLEYHL, B.A. Nebraska 1936; M.A. Minnesota 1947. History of the California rice industry. 1954. *Minnesota.*

JOHN A. BOAN, B.A. Saskatchewan 1948. Risks and uncertainty in agriculture and the effects on productivity with special emphasis on entrepreneurial uncertainty of preferences. 1953. *Ohio State.*

JAMES N. BOLES, B.A. San Diego State 1948; M.S. California 1951. Cost relationships in evaporated milk plants. 1954. *California.*

TED R. BRANNEN, B.S. Arkansas 1944; M.S. 1947. History of nature and disposition of the agricultural "surplus" problem. 1954. *Texas.*

NORMAN V. BRECKNER, B.A. Washington 1947; M.A. 1949. Estimation of an agricultural investment function. 1954. *Chicago.*

C. CURTIS CABLE, JR., B.S. Oklahoma A. and M. 1948; M.S. 1949. Economic analysis of fluid milk distribution in small communities in Minnesota. 1954. *Minnesota.*

GORDON J. DOBSON, B.S. Saskatchewan 1948; M.S. Ohio State 1949. The use of intergovernmental agreements in the marketing of agricultural commodities, with particular reference to the International Wheat Agreement of 1949. 1953. *Ohio State.*

D. K. FAIRBAIRNS, B.S. McGill 1949. Foundations for agricultural policy: political pressure and economic theory as guides to the policy maker—some lessons from the controversy over the Corn Laws. 1953. *McGill.*

MERRILL M. GAFFNEY, B.A. Reed 1948. Land speculation as an obstacle to optimum land allocation. 1955. *California.*

ROBERT GUSTAFSON, B.S. Michigan 1940; M.A. Chicago 1951. The storage of grain to offset fluctuations in yield. 1954. *Chicago.*

IRVING J. HOCH, Ph.B. Chicago 1945; M.A. 1951. Estimation of production function parameters for agriculture. 1954. *Chicago.*

EDWARD B. HOGAN, B.A. San Jose State 1949; M.S. Wisconsin 1951. A study of oligopoly in the dairy supply industry. 1955. *Wisconsin.*

VERNON C. JOHNSON, B.S. Southern 1948; M.S. Wisconsin 1951. A survey of leasing practices in Wisconsin agriculture. 1954. *Wisconsin.*

DON KANEL, B.S. Wisconsin 1945; M.S. 1952. Appraisal of the theory of land tenure 1954. *Wisconsin.*

LEON T. KENDALL, B.S. St. Vincent 1949; M.B.A. Indiana 1950. Criticisms of the Chicago Board of Trade, 1948-1952. 1954. *Indiana.*

BENOIT J-E LAVIGNE, B.A. Laval 1950; M.S. Wisconsin 1952. Measurement of labor productivity on Wisconsin farms. 1955. *Wisconsin.*

JERRY M. LAW, B.S. Louisiana State 1942; M.S. 1948. The development of a classification of market structures for agriculture. 1954. *Minnesota.*

J. ROBERT LINDSAY, B.A. North Carolina 1949. Oil refining and the future of the Gulf Coast. 1954. *Harvard.*

TRAVIS W. MANNING, B.S. Oklahoma A. and M. 1949; M.S. 1950. Economic aspects of the development of agricultural cooperatives in Minnesota. 1954. *Minnesota.*

FRANCIS B. McCORMICK, B.S. Ohio State 1939; M.S. 1947. An analysis of the market news service for livestock and grain in Ohio, with special reference to the media of radio and daily newspapers. 1953. *Ohio State.*

GLEN H. MITCHELL, B.S. Ohio State 1949; M.S. 1951. Prepackaging of fruits and vegetables, with special emphasis on the Ohio apple industry. 1954. *Ohio State.*

ALEXANDER H. MORRISON, B.A. Virginia Military Institute 1939. The impact of industrialization on the economy of a rural area in Northern Virginia. 1954. *Virginia.*

E. NIEBYL, B.A. Vassar 1934. Housing in small communities. 1953. *McGill.*

WILLIAM G. O'REGAN, B.S. California 1949. A statistical analysis of the demand for oranges and orange products. 1953. *California.*

CHESTER E. PETERS, B.S. Kansas State 1947; M.S. 1950. Analysis of land use and resource development programs particularly illustrated by experience and needs of Marquette County, Wisconsin. 1954. *Wisconsin.*

W. GEORGE PINNELL, B.A. West Virginia 1950; M.A. 1951. A survey of the economic base of the Evansville, Indiana metropolitan area. 1954. *Indiana.*

ARTHUR PYKNONEN, B.S. Wisconsin State; M.S. Wisconsin 1951. An economic analysis of the postwar real estate market in Wisconsin. 1955. *Wisconsin.*

ALBERT H. SCHAAF, B.A. California (Los Angeles) 1946. Federal government real estate and housing credit policy. 1955. *California.*

SEYMOUR SMIDT, B.A. Chicago 1948. Regional location for carryover stocks of corn and wheat. 1954. *Chicago.*

PAUL F. TJENSVOLD, B.A. California 1928; M.A. Southern California 1947. The social and economic effects of changes in the forms of Arizona agriculture. 1955. *California.*

S. TRACHTENBERG, B.A. Manitoba 1942; M.A. Toronto 1943. Some aspects of the distribution of fishery products to North American markets with special reference to cost factors. 1953. *McGill.*

ABRAHAM M. WEISBLAT, B.A. New York 1940. Utilization of manpower on Wisconsin farms. 1953. *Wisconsin.*

HOWARD C. WILLIAMS, B.S. Savannah State 1942; M.S. Ohio State 1947. The elasticity of demand for beef and pork measured at the farm level. 1953. *Ohio State.*

Labor

Degrees Conferred

ROBERT J. AGNEW, Ph.D. Massachusetts Institute of Technology 1953. Diesel-electric locomotive and railway employees.

ROBERT L. ARONSON, Ph.D. Princeton 1953. Job modifications and collective bargaining in the mass-production industries.

FRANCIS D. BARRETT, Ph.D. Massachusetts Institute of Technology 1953. Ecological analysis of the national and Catholic labor movement in Quebec.

EDWIN F. BEAL, Ph.D. Cornell 1953. Origins of codetermination in Western Germany *(Mitbestimmung).*

HOWARD A. BRIDGMAN, Ph.D. Harvard 1953. Some patterns in absenteeism.

PHILIP A. BROOKS, Ph.D. Columbia 1953. Multiple-industry unionism in Hawaii.

ROBERT B. BUCHELE, Ph.D. Chicago 1952. The contributions and limitations of job evaluation as a managerial device.

JOHN C. CABE, Ph.D. Illinois 1952. A critical examination of national labor policy in the settlement of labor disputes, 1945-1950.

GLENN M. COLEMAN, Ph.D. Pittsburgh 1952. The growth of management-labor understanding in the steel industry of Western Pennsylvania with special emphasis on job security and seniority.

WILLIAM G. DICK, Ph.D. Nebraska 1953. The development of industrial relations: a case study.

HERMAN GADON, Ph.D. Massachusetts Institute of Technology 1953. Arbitration and the meaning of the collective bargaining agreement.

RUSH V. GREENSLADE, Ph.D. Chicago 1952. The economic effects of collective bargaining in bituminous coal industry.

MYRON L. JOSEPH, Ph.D. Wisconsin 1953. The operation and effects of the Taft-Hartley law in the Pittsburgh district.

E. DOUGLAS KUHNS, Ph.D. Syracuse 1952. The theoretical structures of the labor problems studies.

REV. EDMUND A. KURTH, Ph.D. Georgetown 1953. Codetermination in German Catholic thought.

LEONARD LECHT, Ph.D. Columbia 1953. Experience under railway labor legislation.

MITCHELL LOCKS, Ph.D. Chicago 1953. The effect of unionism on wages in a local labor market.

VAL R. LORWIN, Ph.D. Cornell 1953. Trade unions in France.

JEANNE S. PEARLSON, Ph.D. Harvard 1953. Equal pay for women; its development in the United States.

LLOYD F. PIERCE, Ph.D. Wisconsin 1953. The activities of the American Association for Labor Legislation in behalf of social security and protective labor legislation.

THEODORE W. ROESLER, Ph.D. Wisconsin 1953. State-federal relations in labor legislation

HILDA R. ROSENBLOOM, Ph.D. Harvard 1953. Selected issues in state temporary disability insurance; analysis of existing acts and study of a proposed Massachusetts program.

SVERRE I. SCHELDRUP, Ph.D. Wisconsin 1953. The farmer-labor movement in Norway.

ROBERT C. SEDGWICK, Ph.D. Syracuse 1953. Federal regulation of union unfair practices against employees.

GORDON S. SKINNER, Ph.D. Wisconsin 1953. Experience rating in unemployment insurance history, methods and operation.

FRED SLAVICK, Ph.D. Princeton 1953. The provision of disability and medical care insurance through collective bargaining—an analysis of ten programs.

STEPHEN P. SOBOTKA, Ph.D. Chicago 1952. The influence of unions on wages and earnings in the building construction industry.

BENJAMIN S. STEPHANSKY, Ph.D. Wisconsin 1952. Collective bargaining in transition.

MRS. GENE B. TIPTON, Ph.D. California (Los Angeles) 1953. The labor movement in the Los Angeles area during the nineteen forties.

JOHN J. WAELTERMANN, Ph.D. St. Louis 1953. A study of paid-vacation, paid-holiday and shift-differential practices in the Saint Louis metropolitan area.

WILLIAM B. WAIT, Ph.D. Cornell 1952. An historical and comparative study of the development of California and New York minimum wage laws.

KENNETH F. WALKER, Ph.D. Harvard 1953. Industrial relations in Australia.

THOMAS L. WHISLER, Ph.D. Chicago 1953. Merit rating: a management tool.

JOHN C. WOUNSCH, Ph.D. Southern California 1953. The contribution of the Swedish labor movement 1940-1950 to industrial relations.

Theses in Preparation

JOE C. ASHBY, B.S. North Texas State 1943; M.A. Texas 1950. The development of the Mexican labor movement under Cardenas. 1954. *Texas.*

JAMES W. BENNETT, B.A. Maryville 1949; M.S. Tennessee 1950. The Railway Labor act of 1926. 1953. *Florida.*

JOHN V. BERG, M.A. Michigan 1947. The guaranteed annual wage and unemployment insurance: a comparison and evaluation. 1954. *Michigan.*

MELVIN K. BERS, B.A. George Washington 1943; M.A. 1948. The nature of telephone unionism. 1954. *California.*

GORDON W. BERTRAM, B.A. British Columbia 1945. Industrial relations in the housing and construction industry, Northern California. 1955. *California.*

I. U. Z. BHATTY, B.A. Allahabad 1944; M.A. 1948. A comparative study of certain aspects of labour relations in the Tata Steel Co., India, and the Steel Co. of Canada. 1954. *Toronto.*

JACOB J. BLAIR, B.A. Cincinnati 1924; M.A. Pennsylvania 1929. Hourly rates in selected steel companies. *Pennsylvania.*

MARJORIE S. BROOKSHIRE, B.A. Texas 1943; M.A. 1945. Employment of Latin Americans in Corpus Christi labor market area. 1954. *Texas.*

KENNETH CAMERON, B.A. Harvard 1934. General economic program, organized labor in France, 1945-52. 1955. *California.*

LIEN CHAO, B.A. Hunan 1945; M.A. Minnesota 1950. Distinctive patterns of industrial relations in Korea. 1955. *Minnesota.*

PAO LUN CHENG, B.S. National Chiao-Tung 1944; M.A. Missouri 1949. Labor supply over the cycles. 1954. *Wisconsin.*

CHARLES COGEN, B.A. Cornell; LL.B. Fordham 1927. The right to a job. 1954. *Columbia.*

ROBERT P. CRISARA, B.S. Cornell 1950. Environmental aspects of the Scanlon Plan. 1954. *Massachusetts Institute of Technology.*

DONALD E. CULLEN, B.A. Hobart 1947; M.S. Cornell 1949. The interindustry wage structure, 1899-1950. 1953. *Cornell.*

DAVID J. DAVIES, M.S. Illinois 1947. Manpower problems in a defense economy. 1954. *Michigan.*

CARL F. ERBE, B.A. Iowa State Teachers 1949; M.A. Iowa 1950. A study of grievance procedure in industry. 1954. *Iowa.*

MERTON W. ERTELL, S.B.B.A. Buffalo 1938; M.B.A. 1949. The C.I.O. industry council plan—its background and implications. *Chicago.*

HARLAND G. FOX, B.A. Wabash 1948; M.A. Minnesota 1949. Directional patterns of inter-occupation mobility of men: St. Paul 1940-50. 1954. *Minnesota.*

WALTER H. FRANKE, JR., B.A. St. Olaf 1950; M.S. Wisconsin 1951. Employment opportunities of older people. 1955. *Wisconsin.*

WILLIAM GOLDNER, B.A. Stanford 1937; M.A. California 1951. Influences on the wage structure of local labor markets. 1955. *California.*

KARL C. GRUEN, B.S. *Louisville* 1950; M.S. Cornell 1952. A study of municipal mediation plans. 1954. *Cornell.*

DALE A. HENNING, B.S. Pennsylvania 1948; M.S. 1949. Wage stabilization policies and problems: 1950-1952. 1954. *Illinois.*

MURRAY HERLIHY, B.A. Alberta 1948; M.A. Chicago 1950. The determinants of the collective bargaining policies of the UAW-CIO in Canada. 1954. *Chicago.*

IRWIN L. HERRNSTADT, B.A. Columbia 1950. Consequences of economic change on textile union locals. 1954. *Massachusetts Institute of Technology.*

WILLIAM G. HOSKING, B.A. Hobart 1949; M.S. Cornell 1950. A case study of intercity wage rate differentials of building tradesmen. 1953. *Cornell.*

SINGAMMAL IYENGAR, B.A. Madras 1936; M.A. 1945. Position of women workers in India. 1954. *Northwestern.*

DUDLEY W. JOHNSON, B.A. Pacific 1950. Use of escalator clause in trade union contracts. 1955. *Northwestern.*

JOSEPH KRISLOV, B.Ed. Ohio 1949; M.A. Western Reserve 1950. Representational and jurisdictional disputes in American labor unions. 1954. *Wisconsin.*

DANIEL H. KRUGER, B.A. Richmond 1949; M.A. Wisconsin 1951. Background and factors in the collective bargaining experience in Wisconsin. 1955. *Wisconsin.*

WILLIAM O. KUHL, B.A. Iowa State Teachers 1947; M.S. Wisconsin 1949. Recent changes in American labor's political methods. 1954. *Wisconsin.*

JAMES W. KUHN, B.A. Harvard 1949; M.A. Yale 1950. The impact of labor party affiliation upon trade unions' internal policies and procedures. 1953. *Yale.*

A. MATTHEW LORD, B.A. Brooklyn 1948; M.A. New York 1950. The bakery industry in New York City—a study of intra-industry patterns of labor relations. 1954. *New York.*

RICHARD M. LYON, LL.B. Brooklyn Law 1950; M.S. Cornell 1952. Legal issues and governmental policy formation concerning agricultural migratory labor in the United States. 1953. *Cornell.*

ROBERT M. MACDONALD, B.A. Yale 1950; M.A. 1951. Wage structure and the development of collective bargaining in the paper and pulp industry. 1953. *Yale.*

ZENON MALINOWSKI, B.A. Yale 1939; M.B.A. Chicago 1948. Income of statisticians in the United States. 1954. *Chicago.*

CAMPBELL MCCONNELL, B.A. Cornell 1950; M.A. Illinois 1951. An analysis of economic theories of collective bargaining. 1953. *Iowa.*

MRS. G. E. MCKENZIE, B.A. Wellesley 1945; M.A. Toronto 1951. Conditions of labour in Canada 1911-1940. 1954. *Toronto.*

FRANK B. MILLER, B.A. Reed 1943; M.S. Cornell 1949. Work teams in a small factory, internal and external adaptations to change. 1953. *Cornell.*

GRADY L. MULLENNIX, B.S. North Texas State 1942; M.S. 1942. History of Texas State Federation of Labor. 1954. *Texas*

FREDERIC T. NEELY, B.S. Virginia 1950; M.A. 1951. State legislative policies for the control of labor organizations. 1955. *Virginia.*

MONROE O. NEWMAN, B.A. Antioch 1950. Temporary disability insurance. 1954. *Illinois.*

ARTHUR J. NOETZEL, B.B.A. John Carroll 1938; M.B.A. Northwestern 1940. Management and the utilization of the older worker. 1953. *Michigan.*

FRANCES E. OXLEY, B.A. Western Ontario 1949; M.A. Indiana 1950. The effects of unions upon wages. 1954. *Indiana.*

WILBUR F. PILLSBURY, B.A. Dartmouth 1946; M.C.S. 1946. The use of corporate financial statements and related data by organized labor. 1954. *Indiana.*

ROBERT S. POLKINGHORN, B.A. Colorado 1948. Wages and salaries in the United States compared regionally. 1954. *Chicago.*

ELTON RAYACK, B.A. George Washington 1949. Wage rates and earnings in the men's clothing industry. 1954. *Chicago.*

JANE C. RECORD, B.A. Georgia-Woman's 1936; M.A. North Carolina 1938. Union rivalry on the San Francisco waterfront. 1955. *California.*

THOMAS ROBERTS, B.A. Pennsylvania 1933; M.A. 1938. Industrial relations in the Philadelphia transit industry. 1955. *Pennsylvania.*

EDWARD ROSENBAUM, B.A. Wayne 1950; M.S. Wisconsin 1951. The rebirth of maritime unionism. 1954. *Wisconsin.*

BERNARD SCHURMAN, B.S.S. City (New York) 1939; M.A. Columbia 1947. History of railway labor relations to the role of emergency boards in railway labor disputes. 1954. *Columbia.*

DON ARTHUR SEASTONE, B.A. Denver 1949; M.A. 1950. Guaranteed wages and employment and their role in collective bargaining. 1954. *Oregon.*

ABRAHAM J. SIEGEL, B.A. City (New York) 1943; M.A. Columbia 1949. Worker ideology and industrialization, and international comparison. 1954. *California.*

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EDWARD SUSSNA, B.A. Brooklyn 1950; M.A. Illinois 1952. The 1952 steel strike. 1954. *Illinois.*

JAMES W. SWEENEY, B.S. Georgia School of Technology 1947; M.S. 1948. Incentive compensation aspects of the Scanlon plan. 1954. *Massachusetts Institute of Technology.*

ZACHARY TAYLOR, JR., B.A. North Carolina 1945. Manpower policies since 1945. 1954. *Illinois.*

ROBERT WEINTRAUB, B.A. Williams 1948. The factors underlying the migrations and adjustments of southerners employed in a Chicago automobile assembly plant. 1954. *Chicago.*

SAMUEL M. WILSON, B.A. Maryville 1946; M.B.A. Pennsylvania 1948. The development and operation of work measurement systems in the department of defense. 1954. *Pennsylvania.*

WILLIAM B. WOLF, B.A. California 1942; M.B.A. Northwestern 1945. An evaluation of wage incentive theory. *Chicago.*

Population; Social Welfare and Living Standards

Degrees Conferred

JULES JOSKOW, Ph.D. Columbia 1953. The health insurance plan of greater New York.

RICHARD H. OSTHEIMER, Ph.D. Columbia 1953. Student charges and financing higher education.

ROBERT W. PATERSON, Ph.D. Virginia 1953. The socio-economic structure of Virginia.

PAUL R. POFFENBERGER, Ph.D. American 1953. Problems of security for farmers in the United States with a case study on the extension of social security to farmers in Maryland.

MALCOLM S. TORGERSON, Ph.D. Nebraska 1953. An analysis of the development of old-age assistance in the United States.

VACANCIES AND APPLICATIONS

The Association is glad to render service to applicants who wish to make known their availability for positions in the field of economics and to administrative officers of colleges and universities and to others who are seeking to fill vacancies.

The officers of the Association take no responsibility for making a selection among the applicants or following up the results. The Secretary's Office will merely afford a central point for clearing inquiries; and the *Review* will publish in this section brief description of vacancies announced and of applications submitted (with necessary editorial changes). Since the Association has no other way of knowing whether or not this section is performing a real service, the Secretary would appreciate receiving notification of appointments made as a result of these announcements. It is optional with those submitting such announcements to publish name and address or to use a key number. Deadlines for the four issues of the *Review* are February 1, May 1, August 1, and November 1.

Communications should be addressed to: The Secretary, American Economic Association, Northwestern University, Evanston, Illinois.

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SUPPLEMENT

GRADUATE EDUCATION IN ECONOMICS

By HOWARD R. BOWEN

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PREFACE

In the United States today several thousand persons of varied bac grounds and interests are serving in capacities in which they are ı ferred to as "economists." This number is steadily growing. Ind vidually, many economists are in positions of great influence. Colle tively, they occupy an important place in our society as formulators economic ideas, as interpreters of events, as consultants on public a private policy, as administrators, and as teachers.

In view of the increasing importance of economists in Americ society, it is appropriate that the recognized professional associati in this field, the American Economic Association, should sponsor study of the economic profession—a study to provide information the activities of economists and on the recruitment and training future members of the profession.

This study was conceived as an outgrowth of an earlier investigati conducted by a committee of the Association under the general cha manship of Professor Horace Taylor of Columbia University. T earlier study, which was confined to education in economics at t undergraduate level, resulted in a report, "The Teaching of Unde graduate Economics," *American Economic Review* (Supplement), D cember, 1950. As this report was nearing completion, the Executi Committee of the Association appointed an *ad hoc* committee to co sider the feasibility of a study of education in economics at the gradua level. The members of this group were G. L. Bach of the Carneg Institute of Technology, Milton Friedman of the University of C cago, I. L. Sharfman of the University of Michigan, and J. J. Sper ler of Duke University. D. Gale Johnson of the University of C cago served for a time during the absence of Prof. Friedman. This *hoc* committee reported favorably on the project. The Executive co mittee then submitted a proposal to the Rockefeller Foundation fo grant to finance the study. The grant was approved and the prese study was undertaken during the academic year 1951-52.

Under the agreed plan, the Association has served as sponsor a publisher of the study, but has not attempted to give official sancti to the report or to the recommendations contained therein. The stu has been carried on under my direction and I am solely responsible the conclusions and recommendations.

This is a document based upon observations and facts selected a interpreted by one person who spent the greater part of a year thinki

about the subject, collecting data, and talking with interested people. It is in no sense a report of a committee or of any broadly representative group of economists. However, in the preparation of the report, I consulted widely and was influenced by the opinions, judgments, and criticisms of many persons—especially the members of the *ad hoc* committee.

The objectives of the study have been to describe the role of economists in American life, to survey present practices in the recruitment and training of economists, to clarify the objectives of graduate education in economics, to consider standards, and to offer recommendations toward improving graduate training and increasing the usefulness of the profession. These ambitious objectives have not, of course, been fully achieved. I hope, however, that a useful beginning has been made and that the study will stimulate further and continuing discussion of the many issues considered and recommendations offered.

In general, the recommendations are of a modest sort—looking toward gradual evolution rather than sweeping reform. My observation of present practices and trends in the education of economists has led to the view that on the whole a good job is being done, and that revolutionary changes would not be desirable even if they were possible. Present conditions in the education of economists bear little resemblance to those in medical education as reported by Abraham Flexner in his famous and influential report of 1910.[1]

I found no examples of shoddy graduate education in economics and I can make no "shocking" revelations. On the other hand, I found no examples of smug complacency among graduate faculties of economics. I was impressed by the prevailing spirit of critical self-examination and of earnest endeavor to strengthen educational programs.

There are, of course, substantial differences among the various graduate departments of economics not only in their practices, but even in their objectives. In view of such differences, there was always the temptation to suggest that all departments should conform to one's own conception of the ideal. I have resisted this temptation because it has seemed to me that up to a point there is great virtue in diversity and in division of labor, and that to advocate uniformity would be both unwise and fruitless. Therefore, I have not attempted to lay down rigid standards or to define the content of a "good" educational program in great detail. But I have tried to face the question of what knowledge and abilities economists should have in common, and thus to consider what is the irreducible minimum in the program of edu-

[1] *Medical Education in the United States and Canada,* A report to the Carnegie Foundation for the Advancement of Teaching, Bulletin No. 4, New York, 1910.

cation for persons who are to be entitled to call themselves "econc mists." Moreover, my recommendations are intended as genere suggestions to be applicable in different degrees and in different way to different departments. My feeling is that each department mus interpret these recommendations in the light of its own role, its ow objectives, and its own unique history.

In defining the scope of economics for purposes of this study, I hav not attempted to differentiate sharply between "economics" and th several sub-fields which have splintered off from it and the severa disciplines which at some point are tangential to it. I have leane toward a broader rather than narrower definition of the field, and hav considered explicitly the relationships among the various sub-fields an related disciplines.

Similarly, I have not attempted to distinguish sharply betwee those matters which are common to all fields of graduate education an those which are peculiar to economics. I have avoided this partly be cause I was unable to make the distinction clearly and partly because thought it useful to consider the rules, procedures and standards o graduate schools as applied specifically to the field of economics.

The study is based largely upon three sources: (1) published litera ture, (2) questionnaires, and (3) personal interviews. I should add tha some of my own experience as student, teacher, and administrator ha doubtless found its way into the report.

The published literature in the field is not large. Useful studies an reports on graduate education have been issued by the America Council on Education, U. S. Office of Education, Association of Ameri can Universities, Social Science Research Council, and other agencie Several professional societies, notably the American Chemical So ciety and the American Political Science Association, have issue reports based on studies made by their committees. And a considerabl volume of research on the demand for and supply of trained professiona talent has been in progress at the National Research Council, America Council of Learned Societies, and the Commission on Human Re sources and Advanced Training.

Separate questionnaires were sent to the following classes of re spondents: chairmen of graduate departments of economics; pro fessors of economics; graduate students who received advanced degree in economics in 1939-40 and 1949-50; graduate students in residenc in 1952-53; and employers of economists in colleges, government, an business. Titles and brief descriptions of the questionnaires and th number mailed and returned are shown in the appendix. In the text whenever data derived from the questionnaires are presented, th source is cited by reference to the schedule number and the number o

respondents. The nature of the source can then be ascertained by consulting the Appendix.

Since the object of the questionnaires was primarily to obtain opinions and judgments from a broad range of institutions and individuals rather than to obtain precise quantitative estimates, no attempt was made to utilize refined sampling procedures or to adjust the results for non-response. The returns from each questionnaire, however, were widely dispersed with respect to geographic area, type of institution, and specialty of respondent. Moreover, the subjects included in the questionnaires were also frequently covered in personal interviews. I believe, therefore, that a reliable record of the range and variety of opinion and practice has been obtained—even though a precise estimate of the prevalence of any given opinion or practice is not always possible. Some of the questionnaires were long and difficult. I am deeply indebted to the hundreds of economists who expressed their genuine interest in the study by filling out the questionnaires so informatively.

In the course of the study I conducted personal interviews with 250 professors, heads of departments, and graduate deans at 30 universities located in all parts of the country. I regret that I was unable to visit all of the institutions (perhaps 135) offering graduate work in economics. I did try to include a cross-sectional sample of the entire group of institutions and also to visit those having unique or unusual features in their graduate programs. At every institution which I was privileged to visit, faculty members and administrative officials gave unstintingly of their time and advice. I also conducted numerous interviews with government officials, graduate students, former graduate students, business economists, and others.

I regret that I can name only a few of the several hundred persons who contributed significantly to this study. I should like to acknowledge especially the assistance and advice offered by: Frank H. Knight, John H. Williams, Harold A. Innis, and Calvin B. Hoover, the four successive Presidents of the American Economic Association who served during the period of the study; the members of the executive committee of the Association; the members of the *ad hoc* advisory committee for the study; James Washington Bell, the efficient secretary of the Association; and Horace Taylor, chairman of the earlier study on undergraduate education in economics. The following persons offered many valuable suggestions or reviewed sections of the manuscript: F. M. Boddy, Lois S. Bowen, O. H. Brownlee, Malcolm M. Davisson, Dudley Dillard, James S. Earley, J. K. Galbraith, Claude E. Hawley, R. B. Heflebower, Walter E. Hoadley, G. V. Lannholm, Mary Lois Lucas, John Perry Miller, Paul A. Samuelson, Edward S. Shaw, Carl S. Shoup, Elbridge Sibley, J. F. Wellemeyer, Paul Webbink, Dael Wolfle, and

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A special word of appreciation is due the Rockefeller Foundation for its generous financial support of the project and to Dr. Joseph H Willitts of that Foundation who was most helpful in the organization of the study.

Williamstown, Massachusetts HOWARD R. BOWEN
April 1953

CONTENTS

TABLES

Chapter 1

CONCLUSIONS AND RECOMMENDATIONS

In this chapter I shall try to draw together concisely the princip conclusions and recommendations emerging from the study. In sul sequent chapters, these are developed in detail, with supporting dat arguments, and qualifications. They are presented here to provide convenient summary of the entire study.

The Profession (Chapters 2 and 3). In the United States toda there are perhaps 13,000 persons serving as economists. This is a ver rough estimate because there are no well-established criteria for di tinguishing economists from others. With various conceivable criteri the number might be as low as 4,000 or as high as 20,000. The group persons called "economists" (regardless of how that term is defined are a heterogeneous group including persons of widely varied bacl grounds and interests. They are employed primarily in higher educa tion, government, and business. Employment in government has i creased greatly in recent decades. Employment in private busines though still small in the aggregate, is steadily increasing. Today, mar departments of economics in private corporations compare favorab —in staff and budgets—with many college and university department

The salaries of most economists are within the range of $3,000 $12,000. Limited data suggest that salaries are higher in business ar government than in higher education. However, when allowance made for the shorter work year of college teachers and for their oppo tunity to obtain outside compensation, it is not clear that the differen is marked.

The market for economists (at prevailing salaries) has for mar years been brisk. There is little evidence that economists have e countered serious placement difficulty. On the other hand, there is severe "shortage" of economists (at prevailing salary scales), such is reputed to exist for physical scientists and engineers.

In a recent study of the status of various occupations, as judged l a cross-sectional sample of the American public, economists stood w below *all* the other learned professions covered by the study.

Objectives and Standards in Graduate Education (Chapter 4). T profession is apparently in rather general agreement on objectives a standards for graduate education in economics. There is consideral uniformity in the *formal* standards and objectives operative at vario universities. Variations in standards are probably due as much differences in quality of students admitted as to any other factor.

From the point of view of students, the principal objective of graduate study in economics is to prepare for a career. For them it is professional education. Most students are looking to careers in education, government, and business in which technical knowledge of economics will be useful. These objectives correspond approximately to the actual employment of graduate students after completing their studies.

From the point of view of many graduate professors, the principal objective is to produce "scholars." This objective is not regarded, however, as inconsistent with the vocational objective of students. Most graduate professors and other economists feel that the best preparation for professional work in economics consists of education oriented toward scholarship. Even though employment opportunities of economists are expanding into new fields, their formal education should continue to place emphasis on fundamentals and on scholarship. Graduate departments of economics should resist any temptation to convert into trade schools. This means, among other things, that there should be a solid "common core" for all students who are to be awarded advanced degrees in economics—regardless of their specific career objectives. There can be diversity among universities and diversity in the programs of individual students at given universities; but this should not be at the expense of the basic nucleus of substance and technique which should bind the profession together and which should enable economists of all types and persuasions to communicate with one another.

Proposed specific standards for the Ph.D. and the master's degree are presented in summary form on pp. 42-52 and 60-62. There is no need to reproduce them here. The reader is urged to refer to these summaries because they represent the very heart of this report.

The master's degree has fallen into fairly low estate at many institutions and should be upgraded. Students may legitimately study educational methods or technical specialities within economics as preparation for specific vocations; but they should not receive the master's degree in *economics* without completing a basic and relatively non-specialized program involving substantial knowledge of the field, a thesis or its equivalent, and a level of professional competence as an economist. The master's degree (with a thesis) should be taken by most students who later go on to the doctorate.

Recruitment and Selection of Students (Chapters 5 and 6). In recent years, graduate departments of economics have drawn students whose average ability (as measured by tests and college grades) is about equal to the average of all graduate students. The average ability of economics students is lower than that of students in some of the physical sciences and higher than that of students in some of the

less "academic" fields such as fine arts, physical education, home economics, and social work. While current quantitative demands for economists probably do not justify the recruitment of larger numbers into the field, it would be desirable to recruit more students of high quality.

Students make their decisions to enter graduate study in economics relatively late. Only about a third of those in graduate study had decided before their senior years and only two-thirds had decided prior to graduation from college. Recruitment is primarily a function of the undergraduate colleges. Undergraduate departments of economics should help their students become aware of the fact that there is a profession of economics and that it offers wide and varied career opportunities. Students often have direct acquaintance with law, medicine, business, agriculture, and even with chemistry, physics, and engineering. But they are unlikely to know about economics as a profession unless conscious efforts are made to provide information on this subject. Special attention should be given to the counselling of superior students who have elected economics as an undergraduate major. Graduate departments should have more scholarships for *first-year* graduate students, and they should actively seek out superior talent.

Because of difficulties in predicting the success of individual students in graduate school, and because the pressure on enrollment is usually not great, most institutions will be well-advised to adopt a relatively lenient admissions policy combined with a rigorous and prompt weeding out of unsuitable students. Only at those few institutions at which demands for admission exceed reasonable capacity will a rigorous admissions policy be indicated.

Undergraduate offerings in economics vary widely from one institution to another. Moreover, one-third of all graduate students in economics majored in some other field as undergraduates. Therefore graduate students in economics have very uneven backgrounds. As a result there is a tendency in graduate departments to assume that students start their graduate careers with little useable knowledge of economics and with little common experience in other fields. This situation is unwholesome. Firm but gradual action should be taken to stiffen substantive admission requirements and prerequisites. The profession should work toward the formulation of minimal standards for the content of the undergraduate major and toward the requirements of the equivalent of this major for admission to graduate study in economics. An applicant should be prepared at the undergraduate level in at least principles of economics, elementary statistics, money and banking, intermediate economic theory, and in one or two other fields of economics. He should have a knowledge of mathematics through

calculus and a rudimentary knowledge of the major concepts of accountancy.

Greater use of tests is recommended in connection with admissions. Tests are useful (a) as a basis for deciding on the admission of particular students, (b) as a basis for counselling, identifying deficiencies, and later appraisal of the student, and (c) as a method of determining the quality of an institution's applicants in comparison with those of other institutions. The Aptitude Test and the Advanced Economics Test, both parts of the Graduate Record Examinations, are recommended for this purpose.

A rigorous selection policy after admission would involve: (a) the placing of weak students on probationary status, (b) a qualifying examination after admission, and (c) use of the master's degree as a major screening device. Present mortality rates are such that out of 100 students admitted to graduate standing about 40 fail to receive the master's degree or to complete successfully the first year of work. A more rigorous selection policy would increase this rate of mortality.

Content (Chapters 6 and 7). The proliferation of economics in recent decades and the introduction of many new techniques has placed increasing pressure on graduate students. They are asked to assimilate an enormous and varied amount of substance in a few graduate years; they become so completely preoccupied with technicalities that they have little time or energy to acquire the kind of historic, philosophical, and institutional breadth which would give them perspective and judgment.

A partial solution to the problem is to require of all students a well-balanced "common core" of studies designed to provide a solid base for further work in the field. A recommended common core for both the master's degree and Ph.D. is summarized in table 28 on p. 108. For the master's degree, this core includes theory and statistics; for the Ph.D., it includes, in addition, economic history, history of economic thought, and research methods. Beyond the common core, students should be required to achieve both breadth and specialization. Greater attention should be given to achieving a fruitful balance between theoretical and empirical studies.

Research Tools and Verbal Skills (Chapter 8). The important research tools for economists include foreign languages, mathematics, law, accountancy, socio-psychological techniques, historical techniques, and possibly others. No student can be expected to have a useful knowledge of all or many of these tools. A doctoral candidate should, however, achieve a genuine mastery of at least one of them. The particular tool selected should be relevant to his interests and objectives. Present foreign language requirements are on the whole unsatisfactory

for students of economics. While foreign languages are useful tools for economists they are not the only important ones. Students should have the options of choosing from among many tools; at the same time, whatever tool they select should be mastered.

All students should have a sufficient orientation in simple mathematical ideas, symbols, and mode of thought to make economic theory and statistics readily intelligible. In the long run this knowledge should be part of the admissions requirements. More advanced use of mathematics would be regarded as one of the research tools which the student might elect.

High standards of written and oral communication should be required. To develop these skills, students should be given many opportunities for speaking, discussing, and writing; and all master's candidates should prepare theses.

Training for Research and Teaching (Chapters 9 and 10). Competence in research is one of the major objectives of graduate study—regardless of the student's career plans. The first requirement for good research training is an environment in which students have frequent contact with an active research program. The graduate department of economics should emulate, in spirit and practice, the research environment of a scientific laboratory. Students should be drawn into research as observers and as participants. An organized research agency within the department may be a useful aid in creating a desirable kind of research environment. In the research program and in research training, a balance between empiricial and theoretical work should be maintained.

The master's thesis is an essential part of research training. Current tendencies to devalue or eliminate the thesis should be reversed. Professors should be given time to work more intimately with first-year students. Doctoral dissertations should be written mostly in residence and should be written in close consultation with one or more professors. The scope of the doctoral dissertation should be narrowed to that which can be completed at a high standard of quality.

Teaching ability is an asset to an economist regardless of his specific job. Almost all economists are required to impart knowledge to others —whether they are employed in higher education, government, or business. It is appropriate, therefore, that most students should develop some competence as teachers just as all should be expected to have some competence in research. This argues again for similar basic training for all students regardless of career objectives. Teacher training does not, however, require major alteration of the graduate program. It would be desirable to require or encourage students to gain more experience in oral presentation and discussion. Seminars in

college teaching would be useful. Teaching assistantships should be transformed into apprenticeships in which the student works under careful guidance and assistance, and progresses from less to more responsible functions. The efforts of the graduate department should be supplemented by in-service training on the part of institutions employing young teachers.

Time Span of Graduate Study (Chapter 11). The average time in residence between the bachelor's and master's degrees is 1.5 years, and between the bachelor's and the Ph.D., 3.7 years. The average elapsed time between the bachelor's and master's is nearly 3.5 years, and between the bachelor's and the Ph.D., 10 years.

The average period of *residence* is not a cause for concern. If anything, it is too short because too many students do substantial amounts of their work *in absentia*. The average elapsed time, on the other hand, is excessive. The long span of years is the result of inadequate preparation for graduate study, floundering in the choice of a career, inadequate finances, procrastination, and overly-ambitious dissertations. The situation could be improved by better and earlier recruitment, use of financial assistance to see fewer students through to the degree rather than more through only to the preliminary examination, encouragement of students to write dissertations in residence, and dissertation topics of a scope that can be finished in a year or two of intensive work. The dissertation should not be thought of as a final scholarly effort of heroic dimensions representing the most advanced work of which the student will ever be capable; rather it should be a first major effort which, it is hoped, will be succeeded by a long series of later research enterprises.

The Graduate Department of Economics (Chapter 12). There are important differences between undergraduate and true graduate work—differences in content, in objectives, and in spirit. Therefore, a department of economics which offers graduate work should allot a distinguishable and fairly definite amount of staff-time, courses, funds, and facilities to the graduate program. There should be an identifiable *graduate department of economics* with its own institutional personality and its own *esprit de corps*. The supervision of theses and dissertations should be regarded as part of the regular teaching load of staff members, 5 or 6 theses to be counted as the equivalent of one course. The staff should contain a sufficient number of well-known and distinguished scholars to give the department status in the eyes of the profession. The staff should have diversity with respect to special fields, theoretical vs. empirical interests, scientific vs. policy interests, and academic vs. practical experience. To achieve adequate diversity would require a *graduate* staff of no less than 6 or 8 persons. There are both educational

and financial advantages in a sizeable student body. The best environment for graduate study, other things equal, is one in which the number of students exceeds perhaps 40. Most institutions have too few students for most effective work.

In recent years, teaching and research in economics have been subject to radical administrative fragmentation. Many new institutes, bureaus, schools, etc., have been created in which economics is a major field of interest. This movement has been the result of a variety of powerful forces, among them, the proliferation of economics into numerous specialties, the need for interdisciplinary approaches to new scientific and practical problems, the influence of pressure groups, and the effort to attract new money. On the whole, the consequences of this fragmentation have been undesirable. It has led to uneven development of the field, it has impeded communication among various specialists, it has led to narrowed training, and it has sometimes led to unwholesome relations with interest groups. It is not expected that the clock can be turned back, and all of these new agencies restored to the economics department. But a fresh examination of the situation is called for, and further fragmentation should be entered into with great caution. Efforts should be made to coordinate the various units interested in economics and to facilitate communication among them.

How might existing departments be encouraged to improve, and unqualified departments encouraged to discontinue graduate work or not to enter it? Several possible answers were considered. Accreditation by an outside agency is one possibility. This was not recommended. Another more promising possibility is for each department to subject itself, at least once every five years, to examination by a visiting committee of qualified outside members of the profession. Such a committee should be appointed by an outside agency such as the American Economic Association. Its report should be confidential for the use of the department and the general administration of the university. The expenses of the visiting committee should be borne by the university.

Instructional Methods (Chapter 13). In most departments graduate teaching does not differ significantly from undergraduate teaching. This is due partly to the uneven undergraduate preparation of the students. The result is that students do not achieve the intellectual independence and maturity that should be a major purpose of graduate education. Improvement might come through stricter requirements, greater reliance or seminars, workshops, cases, and problems. In short, there should be more creative activity for students as distinct from passive reading and listening. More attention could be given to providing awards and other incentives for distinguished work. Examina-

tion procedures could be improved. One possibility in this connection would be the use of standardized national examinations as part of the basis on which students would be judged. Such examinations, while they should not be the sole basis of evaluating students, would have the advantage of enabling each institution to compare its students with those of other universities, and thus to achieve somewhat more objective standards. The American Economic Association might take leadership in developing such examination procedures.

Graduate Study in Economics: a National View (Chapter 14). About 135 institutions in the United States and Canada offer and sometimes give graduate work in economics. Of these, about 70 award both the master's degree and the Ph.D., and 65 give only the master's degree. In 1951-52, these institutions had a combined graduate enrollment of roughly 3,000 students. During recent years they have awarded about 800 master's degrees and 200 to 400 Ph.D.'s per year. A large part of the graduate work is concentrated in a few institutions. Ten institutions award 60 percent of the Ph.D.'s and ten award 43 percent of the master's degrees. Only 6 institutions awarded 10 or more Ph.D's per year during the post-war period, and only 10 institutions awarded more than 20 master's degrees in 1950-51. The great bulk of institutions in the graduate field are awarding advanced degrees to only a handful of students.

Graduate departments of economics show little tendency to cooperate or to specialize. Each runs a relatively independent "show" and each tries to cover a broad range of specialties.

It is possible that special facilities in Washington and New York for the training of economists would be useful to supplement the facilities offered by universities. The Brookings Institution and the National Bureau of Economic Research might provide these facilities.

There are possibilities of improving the "adult education" of economists. For example, sabbatical leaves should be available for all economists, including those employed in colleges, business, and government; a few leading universities might provide short courses or extended conferences intended primarily for college teachers of economics; the American Economic Association might supplement the annual meeting with smaller and more extended conferences on specialized subjects.

Chapter 2

THE PROFESSION

The several thousand persons who are serving professionally as economists in the United States today are a heterogeneous group whose common distinguishing characteristics are by no means obvious. They have had widely varied education ranging from no formal study in economics to post-doctoral study in the field. They serve different classes of employers, among them, governmental agencies, educational institutions, research organizations, private business firms, and labor unions. A few are self-employed as private consultants or free-lance writers and lecturers. They perform a variety of functions: teaching, research, consulting, administration, writing, and lecturing. Often several of these functions are combined in a single person, and frequently individuals shift from one to another of these functions at various points in their careers, "success" often leading to administrative functions. Their professional interests cover a wide range of subject matter. Economists can be found whose interests border on history, ethics, or social psychology; others are interested in topics verging on statistical method or pure mathematics. Some are interested in the collection and interpretation of data; others confine themselves largely to theoretical studies. Some are concerned with detailed analyses of particular industries; others develop comprehensive theories of general equilibrium or sweeping studies of world economic development. Economists also differ in their views of their professional functions, in their conception of the scope and method of economics, and in the basic premises upon which they build their theoretical conclusions and their policy recommendations.

In a group so heterogeneous, one may easily question whether characteristics can be found to identify economists or to distinguish them from other professional groups. Apparently, the one common element is that all have (or profess to have) interest in and knowledge of some aspect of "that part of individual and social action which is most closely connected with the attainment and with the use of the material requisites of wellbeing."[1]

[1] Alfred Marshall, *Principles of Economics*, 8 ed., London, 1920, p. 1. Marshall's famous definition is apparently unsurpassed as a description of the field of interest of those who are called "economists." Compare "The Profession of Economist," in *The 1948 Directory of the American Economic Association, American Economic Review* (supplement), Jan. 1949, pp. 341-3.

As would be expected in so diverse a group, economists have not developed a tight professional organization which attempts to define criteria for admission or to regulate the professional activities of its members. The American Economic Association and other organizations in the field have virtually no requirements for membership beyond perfunctory endorsement of the individual applicant by one or more members. No licenses or examinations are required for setting oneself up as an "economist." All one needs is to find a job—or a clientele. This is often done with a minimum of formal education in economics. Many economists—especially in business, government, or free-lance activities—have acquired their professional knowledge and skills through individual study or through serving a kind of apprenticeship to more experienced persons.

TABLE 1.—EMPLOYMENT OF PERSONS WITH ADVANCED DEGREES IN ECONOMICS

	Total	Higher education	Other education	Public agencies	Private agencies			Unknown
					Total	Economic work	Other work	
Employment in 1940 of 845 persons who received the Ph.D., 1930–40[a]	100%	61%	1%	23%	8%	—	—	7%[d]
Employment in 1952 of 45 persons who received the Ph.D., 1939–40[b]	100	67	—	22	11	7	4	—
Employment in 1952 of 119 persons who received the Ph.D., 1949–50[b]	100	71	2	18	7	5	2	2
Employment in 1950 of 106 persons who received the Ph.D., from Columbia, 1931–50[c]	100	59	—	18	23	17	6	—
Employment in 1950 of 75 persons who passed orals at Columbia, 1931–50[c]	100	53	—	21	26	23	3	—
Employment in 1950 of 196 persons who received master's degrees from Columbia, 1931–50[c]	100	29	—	24	47	26	21	—
Employment in 1952 of 54 persons who received master's degrees, 1939–40 and 1949–50[b]	100	25	4	20	38	7	31	13

[a] E. V. Hollis, *Toward Improving Ph.D. Programs*, American Council on Education, Washington, 1945, pp. 86–7. Includes degrees conferred by 48 institutions.
[b] Data from Schedule X.
[c] J. W. Angell, *Occupations and Salaries of Former Graduate Students in Economics at Columbia University* (mimeographed), June 20, 1951.
[d] Includes 2% not gainfully employed.

Employment and Functions of Economists

Table 1 presents a compilation of data from several sources indicating the employment of persons who hold advanced degrees in economics. Although the data from the several sources are not entirely consistent, they indicate that roughly two-thirds of the Ph.D.'s and one-fourth of the masters are employed in higher education and that one-fifth to one-fourth of both groups are in public agencies.

Table 2 indicates the distribution of employment and of duties in 1940 of 845 persons who received the Ph.D. in economics in the decade 1930-31 to 1939-40, and of 22,509 persons who received the Ph.D. in all fields during the same period. Table 2 indicates that the percentage of Ph.D. economists in higher education is about the same as that for all fields combined; that relatively more economists are found in public agencies and fewer in private agencies; that the duties of economists lie largely in teaching, research, and administration; and that these duties are distributed in much the same way as those of the whole population of Ph.D's.

TABLE 2.—EMPLOYMENT AND DUTIES IN 1940 OF PERSONS WHO RECEIVED THE PH.D., 1930–31 TO 1939–40[a]

	Economics	All fields combined
Employment:		
Higher education, total	61%	60%
Universities	28	23
Colleges	28	32
University and college	4	3
Junior College	1	2
Other education	1	6
Public agencies	23	8
Private agencies	8	18
Employment status unknown	5	4
Not gainfully employed	2	4
Total	100	100
Duties:		
Teaching	48	47
Teaching and research	8	7
Teaching and administration	2	2
Research	22	24
Research and administration	2	1
Administration	8	8
Other	3	3
Employment status unknown	5	4
Not gainfully employed	2	4
Total	100	100

[a] E. V. Hollis, *op. cit.*, pp. 65, 74–5, 86–7.

Academic Economists

The traditional home base of economists has been the college or university. Economists who are attached to institutions of higher education commonly engage in a variety of activities. Their undergraduate teaching and textbook writing is an important part of liberal education, citizenship training, and training for business. Their graduate teaching helps to produce a flow of newly-trained economists for whom there is apparently a steady and insistent demand. Many of them engage in writing, public speaking, "extension" courses, and other adult educational activities in which they help to create broader understanding of economic affairs. Through their research work, they are an important source of data concerning economic life and they are a major source of theories, ideas, and proposals relating directly or indirectly to public policy. Finally, many of them are in demand by government and private organizations as part time consultants on specific questions of policy or administration.

According to a recent compilation, 4,003 persons are engaged exclusively in teaching economics in universities and colleges of the United States, another 1,085 persons are teaching economics and other social sciences and 887 are teaching the social sciences "in general."[2] These figures suggest that perhaps 4,000 to 6,000 economists—the precise number depending on one's definitions—are employed in institutions of higher education.

Graduate work in economics is generally regarded as an essential part of the training of academic economists, and the Ph.D. is often considered necessary either at the time an economist begins his academic work or within a few years. In one of the questionnaires, academic employers of economists (chairmen of departments of economics in institutions *not* giving graduate work in economics) were queried about the essentiality of the Ph.D. for prospective college teachers of economics. They responded as follows:[3]

	Per cent
Essential or highly desirable	55
Not essential *per se,* but necessary as a union card	19
Desirable but not essential	15
Not essential	6
Depends	2
No answer	3
Total	100

[2] James Washington Bell, "Report of the Secretary," *American Economic Review* (supplement), May 1951, p. 769.

[3] Schedule XI: 89 respondents.

It is clear that the great majority of these academic employers look with favor upon the Ph.D., although only a little more than half were willing to say that the Ph.D. is "essential or highly desirable." Most of those who were dubious about the Ph.D. questioned not the amount of graduate training but rather the suitability of the regimen leading to the Ph.D. for the training of college teachers.

Government Economists

The presence of economists in government is a relatively new phenomenon. As late as 1896, no persons were listed in the Federal Civil Service as "economists" and only 87 persons as statisticians. The word "economic" appeared in the Civil Service list for that year only with reference to an "economic ornithologist."[4] By 1931 there were about 600 persons classified as economists.[5]

A study published in 1941 reported 5,050 economists in the Federal government as of December 31, 1938 of whom 1,950 were agricultural economists.[6]

All of the above figures are estimates, and there are no precise data on the number of economists in the Federal government today. Figures indicating generally the numbers in executive agencies of the government are presented in table 3. The table probably does not include all civil service classifications in which some economists are to be found, but includes most of those in which there are significant numbers of economists. Economists are also employed in small numbers in the legislative branch of the federal government, in professional capacities within the armed services, and in state and local governments. Altogether, there are probably between 4,000 and 8,000 economists employed in governmental service.

The duties of economists in government as stated in a memorandum prepared by the Civil Service Commission are "to advise on; administer, or perform professional and scientific work in economics including the investigation, study, analysis, and interpretation of economic factors and conditions; advisory, consultative, or promotional activities related to economic problems; or the formulation, negotiation, and execution of economic policy."[7] The same memorandum distinguishes positions as *economists* from "those requiring a knowledge of particular industries or commodities, but not requiring a knowledge of the basic

[4] L. D. White, "New Opportunities for Economists and Statisticians in Federal Employment," *American Economic Review* (supplement), March 1937, pp. 210-15.

[5] *Ibid.*, p. 210.

[6] *Monthly Labor Review*, Jan. 1941, p. 83.

[7] Unpublished draft "Introduction to Economic Series."

TABLE 3.—ECONOMISTS IN EXECUTIVE AGENCIES OF THE FEDERAL GOVERNMENT, JUNE 30, 1951[a]

	Number
Professional classifications in which all incumbents are presumably economists:	
general economics	208
business economics	1,219
international trade and development economics	392
fiscal and financial economics	217
transportation economics	134
labor economics	462
agricultural economics	588
forest economics	41
Total	3,261
Professional classifications in which an unspecified portion of incumbents are economists:	
social science	473
foreign affairs	1,136
international relations	210
intelligence research	336
military intelligence research	894
statistics	2,038
Total	5,087
Non-professional classifications in which an unspecified portion of incumbents are economists:	
business analyst	2,450
agricultural marketing specialist	578
industrial specialist	4,009
commodity-industry analyst	1,655
Total	8,692

[a] Data on professional occupations from: U. S. Civil Service Commission, "Full-time Employees of Federal Executive Agencies in Professional Occupations," mimeographed release, 1952; other data supplied by Mr. Calvin P. Deal of the Commission.

principles and theories of economics or the ability to analyze a variety of economic interrelationships and to forecast the potential effects of developments in these industries or commodities on the economy as a whole." The memorandum then states that the "economist is responsible for applying basic economic theory, relating the problems involved to a broad economic context, and interpreting specific developments in terms of their significance to the economy as a whole as well as to a particular industry." More specifically, government economists serve as compilers of basic economic data, as scholars engaged in the formulation of basic theories and ideas, as consultants on questions of policy and administration, and as responsible administrators of public agencies

and programs. Almost always, in connection with these tasks, they perform educational functions in their daily contacts with their non-professional colleagues.

The Federal Civil Service designates the following special fields: agricultural economics, business economics, fiscal and financial economics, forest economics, general economics, international trade and development economics, labor economics and transportation economics. In addition to these major classifications many other positions or sub-classifications, filled by persons designated as economists, are actually found in the Civil Service.[8] And many positions not designated for economists actually require professional competence in that field, and are filled by trained economists.

The minimum requirement for entry into the Federal Civil Service as an economist is "the kind of training in the basic principles and theories of economics which can be gained through a major in economics culminating in graduation from a recognized college or university, or training equivalent in type, scope, and thoroughness."[9] In short, it is a frequent practice to accept persons into the Civil Service as junior professional assistants in economics who have only a bachelor's degree in economics or its equivalent. Such persons are able, if competent, to rise to high grades in the Civil Service without formal graduate education. Advancement becomes possible on the basis of experience and demonstrated ability. Graduate study can be used to a limited extent as a substitute for experience, but graduate study is not a formal requirement for any professional position in economics, and economists without formal graduate training are to be found at all levels in the Federal Civil Service.

A majority of the 22 supervisors of economists in the Federal government who responded to my questionnaires favored graduate study in the preparation of Federal economists. But they were not unanimous in this and they differed considerably on the amount of graduate study which they thought useful. When asked whether the Ph.D. is essential for persons who are expecting to reach the higher positions as economists in the Federal government, their answers were:[10]

[8] Among them are: land economists, city planning economists, housing economists, mineral economists, reclamation economists, Federal works economists, rural population economists, urban population economists, natural resources economists, fisheries economists, fish and wildlife economists, power economists, public health economists, public utilities economists, air transport economists, price economists, and manpower economists.

[9] Unpublished draft of Civil Service Memorandum "Introduction to Economic Series," *op. cit.*

[10] Schedule XII: 22 respondents.

Yes	23%
Desirable but not essential	46
No	27
No answer	4
Total	100

But most of those who were negative or doubtful about the Ph.D. indicated that they favored at least some graduate study for most high-level government economists, and no respondent expressed opposition to graduate study.

The supervisors of economists were then asked whether formal *graduate* training in economics is essential for persons who are expecting to serve in the lower grades as economists for the Federal government. To this question, their answers were:

Yes	64%
Desirable but not essential	14
No	18
No answer	4
Total	100

Those answering "yes" indicated unanimously that at least one year of graduate study or a master's degree was desirable, and of those answering "no," a few thought that the bachelor's degree or the bachelor's plus some "special courses" or "some graduate work" would suffice.

The conclusion emerges that most of this group of supervisors of economists in the Federal government regard some graduate study in economics as desirable for Federal economists at all levels, but that only a minority (23 percent) state unqualifiedly that the Ph.D. is essential even for positions of the higher grades.[11]

In some quarters there have been questions about the adequacy of the formal graduate training of many economists in the Federal government. A Committee of the American Economic Association on Economists in the Public Service, of which Professor Morris A. Copeland was chairman, indicated in 1946 their concern with what they viewed as an "upward trend in the proportion of government economists with little or no graduate training in economics."[12] This group recommended that in the selection of economists of the grade P4 (G.S.11) and above, the requirements should be amended to include the following: "(a) The candidate should be required to establish that he has done a substantial

[11] This conclusion agrees with that reached by a sub-committee under the chairmanship of Professor Ben W. Lewis in 1950. See "The Teaching of Undergraduate Economics," *American Economic Review* (supplement), Dec. 1950, pp. 125-6.

[12] "Report of Committee on Economists in the Public Service," *American Economic Review* (supplement), March 1946, p. 913.

piece of competent, independent economic research, the results of which are set forth in a written report a copy of which is permanently on file with the Commission or in a library approved by the Commission for the purpose; (b) the candidate should be required to establish that he is professionally, competently conversant with the current status of work in two broad phases of economics other than the phase of economics with which his qualifying independent research is concerned."[13] This proposal which would require the Ph.D. or nearly its equivalent for economists of higher grades, would significantly stiffen the requirements and doubtless block the promotion of many persons who might otherwise reach the higher grades under present regulations.

The Copeland Committee recognized, however, that the Federal government now relies, and will doubtless continue to rely, to a large extent on economists who have received a major share of their training on the job and who have not had substantial graduate study. Therefore, they recommended improvement in the quality of the experience and training which these economists receive on the job or concurrently with their work. Although the committee did not specify all the devices by which this could be accomplished, it is easy to suggest several possibilities: attendance at courses in universities or at seminars and classes provided by employing agencies;[14] in-service training for specific jobs; rotation of jobs so that the individual acquires a broad experience;[15] and leaves of absence for study or for practical experience in business, labor unions; etc. Two additional suggestions (in which I strongly concur) have frequently been made. First, that government economists should occasionally have the opportunity to teach or to engage in pure research in close contact with university economists. Second, that government economists should be permitted refresher periods, free from routine duties, similar to the academic sabbatical leave.[16] In this connection, a great opportunity exists for leading universities to provide fellowships or temporary teaching appointments to career economists in the Federal government. The highly successful Niemann Fellowships for journalists at Harvard University suggests the possibilities.

Business Economists

One of the newer and more rapidly growing professional opportunities for economists is in business corporations. Although a few econo-

[13] *Ibid.*, p. 916.

[14] The graduate school of the U. S. Department of Agriculture is an outstanding example.

[15] The tendency of many economists in Washington to move about from one agency to another helps to produce this result, and may actually be advantageous to the service, on balance.

[16] *Ibid.*, p. 915-917. See also, L. M. Short, *Personnel Problems Affecting Social Scientists in the National Civil Service*, Social Science Research Council, April 1946, p. 25.

mists have been so employed for many years, the numbers have undoubtedly multiplied in the past two decades. I should guess, on the basis of various fragments of data, that there may be as many as 600 persons serving today as professional economists in American business firms.[17] Because little information has been published on the role of business economists, I shall discuss this subject in some detail.[18]

My questionnaires to the heads of economics departments in leading business concerns yielded replies from 49 firms including 27 industrial concerns, 13 banks and insurance companies, 4 public utilities, 1 department store, and 4 other companies. Of the 49 respondents 9 carried the title of vice-president or partner, 2 were called "assistant to" the chairman or president, 16 had the title of director of research or equivalent, 15 were labelled "economists," and the remaining 7 had miscellaneous titles. The number of persons employed in the economics departments of the reporting firms is shown in table 4. The number of professional economists varied from 1 to 15 with the median at 3, the total number of assistants varied from 1 to 37 with the median at 5, and the total employment from 1 to 50 with the median at 8. Evidently, the economics departments of many corporations are substantially equal, in number of employees, to the economics departments of many colleges and universities.

The economics departments of the reporting companies were found to be highly placed in the corporate hierarchies. Of the 41 departments giving information on this subject, about half reported directly to the president or chairman, and half reported to a vice-president or controller.

The reporting business economists indicated that they (or their departments) are ordinarily concerned with a wide range of subjects. The subjects mentioned most frequently were general domestic business conditions, markets and prices of the firm's products, governmental policies, problems relating to money and capital markets, economic conditions in foreign countries, and capital budgets.

The work of the business economics departments is actuated by a

[17] The average number of economists in the firms reporting for this study was 4 (see table 4). If as many as 150 companies should have economics departments of the size of those in the sample, as seems likely, the number 600 would be a reasonable minimum. If many persons in market research activities were to be classd as economists, this number would be considerably higher.

[18] For other discussions of the functions and role of business economists, see: National Resources Planning Board, *Research—A National Resource*, Vol. III, "Business Research," Washington, June 1941; Francis C. Jones, "The Role of an Economist in Private Industry," *Michigan Business Review*, March 1950, pp. 6-9; Committee on Economic Policy, U. S. Chamber of Commerce, *Business Management and Economic Analysis*, Washington, 1947; *Business Week*, Jan. 10, 1953, pp. 134-46.

TABLE 4.—PROFESSIONAL ECONOMISTS AND THEIR ASSISTANTS IN REPORTING BUSINESS FIRMS[a]

Number of professional economists employed[b]	Number of firms	Number of assistants employed[c]	Number of firms	Total number of professional economists and assistants employed	Number of firms
1	12	1	6	1	0
2	9	2	2	2	5
3	7	3	7	3	1
4–6	7	4–6	9	4–6	9
7–9	3	7–9	3	7–9	8
10–14	4	10–14	5	10–14	5
15–19	2	15–19	6	15–19	4
20 & over	0	20 & over	5	20 & over	11
unknown	5	unknown	6	unknown	6
Total	49	Total	49	Total	49

[a] Schedule VIII: 49 respondents.
[b] The term "professional economist" refers to "persons doing work for which a knowledge of economics at the professional level is a principal requirement."
[c] The term "assistant" is defined to include "assistants, clerks, interviewers, stenographers, etc."

wide range of objectives. Virtually all of the respondents consider that one of their main purposes is to provide information and judgments relative to specific managerial policies and decisions. And nearly all of them reported that they felt that important managerial decisions are sometimes influenced by the studies, analyses, and recommendations of the economic staff. But almost all of them also reported that they had other objectives—the most important being education of company officials and the business community on economic and public affairs. Of 36 respondents, 32 indicated that they felt that the work of the economic staff helps management to understand the broad economic and social implications of its decisions, and that management is thereby assisted in discharging its public responsibilities. A substantial number considered that their functions also include educational tasks associated with public relations and with the influencing of public policy.

In communicating the results of their studies and investigations, the economics departments of business firms utilize a variety of techniques. The more frequent and more important methods are the preparation of memoranda and publications for distribution within the company and conferences with company officials. Many of them, however, communicate with outside groups by means of publications and addresses, and with public officials through the briefs and testimony they help to prepare and through personal conferences.

In education and experience, the 49 responding business economists are a varied group. On the basis of their personal histories it would be difficult to generalize regarding the kind of education that is suitable for business economists or that prepares for this type of work. In education they ranged from no college work whatever, or college work in a field outside economics, to the Ph.D. in economics. Only a little more than half had taken any graduate work in economics or business administration. Only a fifth had received the Ph.D. in economics—though 3 more held the Ph.D. in mathematics of sociology. More than a third gave no indication that they had had any formal training, either at the undergraduate or graduate level, with economics as a major, though some of these may have studied economics as a minor field.

The relative lack of formal graduate education was apparently offset by a wide and diversified experience. All but a handful indicated that they had had experience in college teaching, government, or business operations, and 57 percent indicated experience in two or more of these activities. Yet only a few of the respondents indicated that they had had experience *with their present companies* in jobs other than research. Evidently, then, most business economists have been recruited from outside their companies after they have had a fairly wide experience in college teaching, government, or business. Apparently, formal academic training in economics has not been a major factor in the selection of these persons.

More light on the academic preparation of business economists is provided by data on the educational backgrounds of the professional economists employed as subordinate staff members in the economics departments of reporting companies. Almost all of the subordinate staff members have had some academic work in economics, and more than three-quarters of them have had some graduate work in economics. That the subordinate staff members as a group have had relatively more *academic* training in economics than the heads of the economic departments is at first surprising. It is to be explained, I think, by several factors: (a) senior business economists are on the whole older than the subordinate staff members and received their formal education when graduate work was less common than today; (b) they were recruited for their all-around judgment and their ability to work with top management rather than for their technical training in economics; (c) positions in business have until recent years been regarded with some suspicion by academic economists; and (d) graduate study does not carry the same prestige in business circles as in the academic world. Most of the subordinate staff members, on the other hand, have been recruited in recent years when a large supply of academically trained economists has been available. This supply has been the obvious source of talent for staffing the growing economics departments of the large

companies, particularly as it has been recognized that the techniques and judgments of the academically trained economist can be put to effective use in business management. It seems likely that more of the top business economists of the future will have had substantial academic training.

Another indication of the attitudes in business toward the training of economists comes from the responses of business economists on the question of whether the Ph.D. is essential for persons who are expecting to enter careers as economists in business and who hope to reach top positions.

The answers were:[19]

Yes	33%
Desirable but not essential	18
Doubtful	4
No	31
No answer	14
Total	100

However, almost all of those who were negative or doubtful regarding the Ph.D. thought that some graduate work in economics is essential. A third of this group considered the master's degree to be sufficient and the remainder felt that only some specialized graduate work in particular areas is needed. When asked their opinion as to whether formal graduate training in economics is "essential or highly desirable" for *subordinate* members of economics staffs in business firms, nearly all expressed judgments favorable to graduate study though only one respondent felt that subordinate professional staff members should have the Ph.D.

The conclusions from the data and judgments regarding graduate education of business economists are: (1) that the majority of top business economists have not had very much formal graduate training in economics, but that most of them favor substantial graduate training for their successors; (2) that a majority of subordinate professional economists in business have had considerable graduate work in economics and most of their superiors believe that they should have at least a year or two of graduate study.

Just as business enterprises have been developing economics departments in recent decades so labor unions have been organizing research and educational divisions employing substantial numbers of economists. Not only the American Federation of Labor, the Congress of Industrial Organizations, and other major labor organizations have developed research and educational staffs with professional economists but also many of their affiliates and independent unions have also found places

[19] Schedule VIII: 49 respondents.

for professional economists. A recent study reveals that research departments are found in 51 of 107 A.F. of L. affiliates, and in 28 of 69 independent unions.[20] In most of these, the research departments are separate from education departments, though in some the two functions are combined. The number of professional research personnel varies from 1 to 20 or more in these unions.[21]

Another growing employment for economists is in private consulting firms which serve a clientele consisting chiefly of business, labor unions, and foreign governments. Consulting economists on the whole perform functions similar to those of economists who are actually in the employ of these organizations.

The combined number of economists in business, labor, and private consulting firms may be somewhere between 1,000 and 1,500. This is, however, no more than a very rough guess.

Note on the Number of Economists in the United States

The question is frequently asked: How many economists are there in the United States? The answer depends, of course, on how one defines "economist." For example, one might define it in terms of formal education, and thus include only those who hold the Ph.D. in economics, or perhaps those who hold at least a master's degree in the field. Or one might define it in terms of functions performed, and thus attempt to count the persons qualified to hold jobs in which the work of an "economist" is performed. Or one might define it in terms of the titles assigned to persons or positions, and thus include anyone who is called an "economist." I have felt that in a profession as indefinite and as loosely-organized as economics, no purpose would be served by formulating an arbitrary definition of "economist," and then attempting to estimate the number of persons who would fit this definition. I have, however, collected a few fragmentary figures which indicate the approximate orders of magnitude.

In the preceding sections of this chapter, I have made very rough estimates of the number of economists in the three principal types of employment as follows:

	Minimum	*Maximum*
College and university	4,000	6,000
Government	4,000	8,000
Business and other	1,000	1,500
Total	9,000	15,500

[20] J. B. S. Hardman and M. F. Neufeld, *The House of Labor: Internal Operations of American Unions*, New York, 1951, p. 230.

[21] *Ibid.*, p. 230. For a discussion of the educational and communications activities of unions, see pp. 171-225 and 419-82.

In 1952, there were 7,267 members of the American Economic Association.[22] This figure doubtless includes persons who would not be regarded as economists under any reasonable criteria and certainly fails to include persons who would unquestionably qualify as economists. For example, a check of the records of the Association revealed that only 71 of 141 individuals who received the Ph.D. in 1939-40, and 159 of 391 who received the Ph.D. in 1949-50 were members of the Association in 1952. And among economists who do not hold the Ph.D., the proportion of non-membership is probably relatively higher. I would judge, therefore, that the membership of the Association grossly understates the number of economists in this country.

Another figure comes from the registration of economists by the National Roster of Scientific and Specialized Personnel. This organization reported the following numbers of registrants as of December 31, 1945:[23]

with the Ph.D.	1,642
with master's degrees	1,923
with bachelor's degrees	3,133
without degrees	651
Total	7,349

These figures almost certainly understate the number of economists. For example, there were almost surely more living persons holding the Ph.D. in economics in 1945[24] than the 1,642 who were registered. The registration of persons with master's degrees was probably even less complete.

Another approach to the problem of deriving the approximate number of economists is (1) to estimate the number of living persons who have been awarded advanced degrees in economics and (2) to estimate the number of these persons who are serving in capacities for which professional knowledge of the field is essential. During the period from 1910 to 1952, American universities awarded about 4,900 Ph.D.'s and about 19,000 master's degrees in economics. (The figure for the Ph.D.'s is fairly reliable but for the master's degrees very rough.) Most of those who received the doctorate during this period also received master's degrees. Therefore, to avoid double-counting and to obtain the number of those for whom the master's was the highest degree, the total number of master's degrees should be reduced by

[22] American Economic Association, *Information Booklet,* 1953, p. 14.

[23] James Washington Bell, "Report of the Secretary," *American Economic Review* (supplement), May 1951, p. 769.

[24] About 3100 Ph.D's in economics were awarded between 1910 and 1945. Allowing for mortality, emigration, immigration, etc., it seems probable that the number of Ph.D.'s living in the United States was not less than 2,500 in 1945.

4,900. This leaves about 14,000 persons who received master's degrees during the period but who did not receive doctorates.

During the period from 1910 some mortality has occurred; however, it has probably been small because the great bulk of the degrees were awarded within the past 30 years, and more than half since 1940. Assuming a mortality of one-fifth, this would leave about 4,000 surviving Ph.D.'s and 11,000 surviving masters.

Some of the recipients of degrees were foreign citizens and now live abroad; others may have emigrated to other countries. On the other hand some individuals with degrees in economics from foreign universities have migrated to this country. The net effect of this migration is unknown; I have assumed that the two movements have been counterbalancing.

These calculations would suggest that there are about 15,000 living persons in the United States who hold advanced degrees in economics. Some holders of advanced degrees, however, do not pursue economics as a profession. Therefore, if we count as economists only those who have advanced degrees and who follow the profession, another reduction in the number is necessary. Table 1 (p. 10) indicates that the great majority, perhaps 95 percent, of Ph.D.'s are employed in higher education, in public agencies, and in economic work within private agencies. These are the types of employment in which they are likely to be serving as professional economists. I have assumed, then, that about 95 percent of the living holders of the Ph.D. in economics are professional "economists." These are estimated, then, at 3,800 (95 percent of 4,000).

Similar data for those with master's degrees (table 1) indicate that from two-thirds to four-fifths are employed in higher education, public agencies, and economic work within private agencies. On the other hand, almost all of those who passed the oral examinations but did not complete the Ph.D. were engaged in professional work. It would seem reasonable to assume then, that perhaps four-fifths of all the persons who hold the master's degree but not the Ph.D. are engaged in professional work. This would mean that of the estimated 11,000 holders of the master's degree in economics, about 8,800 could be classed as "economists." Adding these to the Ph.D. group, gives a total of 12,600 persons with advanced degrees in economics who are serving in professional capacities. To these should be added an unknown but substantial number of persons serving as professional economists who have no advanced degrees in economics. One might guess, on the basis of these calculations, that there are more than 13,000 persons serving as economists in the United States.

The net conclusion of my investigation of the number of economists

in the United States is that, in the absence of definite criteria for distinguishing economists from others, it is impossible to set any one precise figure. At one extreme, if the term "economist" is restricted to persons holding the Ph.D. and pursuing the profession, the number would be about 4,000. At the other extreme, if one included every person who is doing work requiring some knowledge of economics, regardless of his formal education and regardless of the level of the work, the number might exceed 20,000. Between these two extremes, the number would depend upon the definition of "economist" in terms of educational level and nature of jobs performed. To date there is no authoritative or generally accepted definition of an economist which makes possible the designation of any particular number.

Chapter 3

CONDITIONS IN THE PROFESSION

This chapter is concerned with the salaries of economists, the market for their services, and the status of the profession.

Salaries of Economists

Because a large proportion of economists are employed in college teaching and in government service, their salaries are usually related to the somewhat conventional earnings in these two types of employment.

The pay scales of the Federal Government (as of 1952) provide that a college graduate who enters the Civil Service without experience as a Junior Professional Assistant will receive an annual salary of $3,410. A person with a master's degree in economics, and no experience, will probably receive $4,205 and one with a Ph.D. $5,060. (See table 5.) As a new appointee progresses he may ultimately reach one of the higher brackets. Many will reach the range from about $6,000 to $9,000, a few will pass the $10,000 mark, and a very few may enter the "super-grades" which pay from $12,000 to $14,800.

Available data on the salaries of college teachers indicate that they are probably somewhat lower than salaries in the Federal government. However, they are expressed in terms of the academic year of 9 or 10 months, and academic positions often provide perquisites and opportunity for supplementary earnings;[1] hence it is not certain that teaching pays less than government service for personnel of equal quality.

Table 6 presents data on the 1951-52 salaries of teachers in all fields in 40 leading colleges and universities. The salaries reported in this table are doubtless higher than the national averages because only leading institutions are included.

Another indication of the earnings of economists is provided by a study of the salaries in 1950 of persons who were graduate students in economics at Columbia University during the period 1931-1950. These data, presented in tables 7 and 8, were compiled by Professor J. W. Angell and kindly made available by him. These figures show several

[1] Professor George J. Stigler concludes: "In sum, more than 50 per cent must be added to the salaries of college teachers in making comparisons with earnings in independent professions. With this correction in 1941, the 'net advantages' of college teaching exceeded those of dentistry, and were almost equal to those of law and medicine." *Employment and Compensation in Education,* National Bureau of Economic Research, Occasional Paper 35, New York, 1950, pp. 62-3.

TABLE 5.—PAY SCALES FOR PROFESSIONAL WORKERS IN THE FEDERAL GOVERNMENT, 1952[a]

Grade		Salary range
Professional	"General service" equivalent	
1	5	3,410– 4,160
2	7	4,205– 4,955
3	9	5,060– 5,810
4	11	5,940– 6,940
5	12	7,040– 8,040
6	13	8,360– 9,360
7	14	9,600–10,600
8	15	10,800–11,800
—	16	12,000–12,800
—	17	13,000–13,800
—	18	14,800[b]

[a] U. S. Civil Service Commission.
[b] There is no range within grade GS18.

interesting relationships. (1) Average salaries of those who passed their orals were on the average about $1,100 higher than the salaries of those with only the M.A.; and average salaries of those with the Ph.D. were on the average about $1,300 higher than those who had merely passed the orals.[2] These differentials were somewhat larger for those employed in government service and other economic work, and somewhat less for those employed in teaching. This is surprising in view of the usual opinion that formal graduate education means more in college teaching than in other types of work. (2) Salaries of economists apparently increase as they get more experience. Those who attained their highest academic standing in 1941-45 were getting average salaries about $1,600 higher than those who ended their graduate studies in 1946-50; the 1936-40 group were receiving about $900 more than the 1941-45 group; and the 1931-35 group about $800 more than the 1936-40 group. (3) The salaries of those in government service and other economic work (presumably in business firms, trade associations, labor unions etc.) was about $1,700 greater than the salaries of those in teaching Average salaries in government and other economic work were about equal. (4) The average salaries of men and women were equal in teaching, but there was a differential of more than $2,000 in government service and a differential of nearly $1,000 for all types of employment combined (table 8). Three women reported salaries above $10,000.

[2] In interpreting these comparisons, allowance must be made for the fact that the average age of the master's and oral's groups is undoubtedly lower than that for the Ph.D. group The effect of this age difference, and the resulting difference in amount of experience, would be particularly marked for those who attained highest academic standing in 1946-50.

TABLE 6.—RANGE OF INSTRUCTIONAL SALARIES IN SELECTED COLLEGES AND UNIVERSITIES, 1951–52, BY RANK[a]

	Professors	Associate professors	Assistant professors	Instructors
6 small private institutions, New England and Middle Atlantic				
Minima	$5,200– 7,750	$4,200– 6,000	$3,300–4,600	$3,000–3,500
Maxima	7,750–11,000	6,000– 8,300	4,750–8,000	3,900–4,400
Mean	6,950– 8,581	5,320– 6,565	4,350–5,119	3,572–3,932
5 medium-sized institutions, New England and Middle Atlantic				
Minima	5,000– 7,000	4,000– 5,000	3,200–4,200	2,300–3,600
Maxima	8,700–12,500	7,500– 9,000	5,700–6,000	4,000–4,500
Mean	6,199– 8,568	5,058– 5,981	4,114–5,169	3,250–3,950
4 large private institutions, New England and Middle Atlantic				
Minima	6,000–10,000	5,000– 6,500	4,000–5,000	3,000–4,000
Maxima	15,000–17,500	7,500– 9,000	5,500–6,000	3,600–4,500
Mean	7,769–12,600	5,618– 7,990	4,555–5,415	3,430–4,000
3 private Women's Colleges in New England and Middle Atlantic				
Mean	6,073– 6,832	4,939– 5,267	3,981–4,550	3,125–3,468
5 small private institutions, North Central and Pacific				
Minima	4,800– 5,550	3,600– 4,650	3,400–3,700	2,700–3,000
Maxima	6,000– 8,500	4,600– 5,400	4,099–4,750	3,399–4,100
Mean	5,284– 6,639	4,261– 4,915	3,623–4,130	3,046–3,592
4 medium-sized and large private institutions, North Central and Pacific				
Minima	5,000– 6,142	4,000– 5,092	3,300–4,000	2,800–3,600
Maxima	7,980–15,000	6,142– 8,200	5,092–7,500	4,042–5,000
Mean	6,625– 8,133	5,277– 6,087	4,334–4,927	3,551–3,981
4 medium-sized and large private institutions in South				
Minima	4,950– 5,500	3,900– 4,800	3,200–3,600	2,400–3,000
Maxima	7,250–10,750	6,000– 6,500	5,000–5,500	3,900–4,500
Mean	5,591– 7,154	4,848– 5,390	4,224–4,490	3,318–3,590
3 private institutes of technology[b]				
Mean	8,782– 9,686	6,648– 6,997	5,115–5,455	3,400–3,911
6 large state universities, North Central and Pacific				
Minima	5,270– 6,500	4,720– 5,670	3,700–4,203	2,700–3,780
Maxima	9,375–17,200	6,500–11,000	5,000–7,500	4,000–6,690
Mean	7,216– 8,683	5,660– 6,349	4,550–5,150	3,684–4,337

[a] Source: *Bulletin*, American Association of University Professors, Winter 1951–52, pp. 796–802. Salaries are expressed in terms of 9–10 months' service. They refer to all fields—not to economics alone

[b] On basis of 10½ and 11–12 months of service.

TABLE 7.—AVERAGE SALARIES IN 1950 OF FORMER GRADUATE STUDENTS IN ECONOMICS AT COLUMBIA UNIVERSITY, BY HIGHEST ACADEMIC STANDING AND BY TYPE OF EMPLOYMENT[a]

Highest academic standing attained and type of employment	Years during which highest academic standing attained				
	Entire period 1931–50	1931–35	1936–40	1941–45	1946–50
M.A.					
Teaching	$ 3,891	$ 5,294	$ 5,525	$ 3,980	$ 3,503
Government	5,436	8,113	6,867	5,881	4,110
Other economic work	5,123	7,890	11,150[b]	5,371	4,240
All other	4,660	4,625	4,900	12,000[b]	3,935
Average, entire group	4,772	6,709	6,830	5,534	3,988
Passed orals					
Teaching	4,066	—	5,438	4,737	3,783
Government	6,993	7,250	6,450	8,340	5,760
Other economic work	7,887	15,500[b]	8,975	—	5,711
All other	16,000[b]	—	—	—	16,000[b]
Average, entire group	5,862	11,375[b]	7,055	6,738	4,709
Ph.D.					
Teaching	5,964	7,700	6,009	6,077	5,017
Government	8,936	8,350	8,900	9,360	8,808
Other economic work	9,494	17,250[b]	10,300[b]	6,480	11,167[b]
All other	10,900[b]	—	—	—	10,900[b]
Average, entire group	7,175	8,593	7,719	6,691	6,622
Total					
Teaching	4,805	7,023	5,786	5,531	3,979
Government	6,523	7,904	7,358	7,628	5,331
Other economic work	6,592	10,495[b]	9,973	5,833	5,031
All other	5,963	6,166	4,900	12,000[b]	5,747
Average, entire group	5,714	8,089	7,240	6,306	4,679

[a] J.W. Angell, *Occupations and Salaries of Former Graduate Students* (mimeographed), June 20, 1951. Data cover salaries only, and omit earnings from other sources; based on 331 replies
[b] Based on fewer than 6 cases.

Market for Economists

With the sizeable graduate enrollments of recent years, and the large number of advanced degrees awarded in economics, the question arises as to whether the market will continue to absorb the annual crop of new economists at present salary levels. For example, since the end of World War II (academic years 1945-46 through 1951-52), about 1,800 Ph.D.'s have been awarded by American universities. The magnitude of this figure can be appreciated when it is realized that this post-war crop represents nearly one-third of all the doctorates in economics ever awarded in this country. In all the years prior to 1945-46 fewer than 4,000 doctorates had been granted.

TABLE 8.—AVERAGE SALARIES IN 1950 OF FORMER GRADUATE STUDENTS IN ECONOMICS AT COLUMBIA UNIVERSITY, BY SEX[a]

Highest academic standing attained and type of work	Men	Women	Men and Women
M.A.	$4,843	$4,455	$4,772
Passed orals	5,939	5,066	5,862
Ph.D.	7,368	5,892	7,175
Total	5,854	4,912	5,714
Teaching	4,803	4,816[b]	4,805
Government	6,959	4,837	6,523
Other economic work	6,858	6,300	6,592
All other	6,186	4,173	5,963
Total	5,854	4,912	5,714

[a] J. W. Angell, *op. cit.* Based on replies from 282 men and 49 women who were regularly employed.

[b] Because of the structure of the sample, no significance should be attached to the fact that the average salary in teaching for women slightly exceeded that for men.

I have no reliable information with which to predict the future market for economists. The following conjectures seem reasonable: (1) that the population of college students will grow in the years ahead, and that opportunities in college teaching will expand; (2) the demand for economists in business, foundations, and other private organizations will increase, though the absolute numbers involved may not be large. (3) there may be a brisk market throughout the world for economists trained in the United States. It is likely, on the other hand, that employment opportunities in the Federal government will grow less rapidly than during recent decades.

Replies to some of my questionnaires suggest that the market—at least through 1952—has been brisk, that graduate students in economics have been finding little difficulty in placement, and that experienced economists have been able to obtain suitable positions in the profession at prevailing salary scales.

A large majority of employers or supervisors of economists in universities and colleges, business firms, and government indicated that the market for economists has been tight. Similarly a large majority of professors in graduate departments of economics stated that most students—both at the master's and doctoral level—have been readily placed. There was some indication, however, of greater placement difficulty during 1951-52 and 1952-53 than in earlier years.

When graduate students in residence in 1951-52 were asked about their career objectives, most indicated that they hoped to have positions as professional economists in higher education, government, or

business. When asked about the prospects of their being able to get the kind of position they hoped for, about two-thirds indicated a high degree of confidence. The answers regarding their prospects were as follows:[3]

	Per cent
almost certain	31
reasonably confident	31
50-50 chance	12
doubtful	9
unlikely	6
don't know	11
Total	100

The relatively strong demand for economists in the past few decades should not be surprising in view of the great expansion of employment opportunities in higher education, government, and business. Whether this demand will continue to grow in the future is uncertain.[4] It seems likely, however, that there will be a fairly consistent demand for persons with the Ph.D. or its near-equivalent. A large proportion of the economists practicing today—including many in high-level positions—have not had formal education equivalent to that represented by the Ph.D. As the supply of Ph.D.'s grows, an increasing proportion of jobs requiring competence in economics will probably be filled with persons having that degree; at the same time it may become more difficult to secure positions in economics without the degree.

Status of the Profession

It would be gratifying for economists to think only of their growing influence and prestige in American life; but candor requires that they also face up to their professional limitations. On many important scientific matters in which society is deeply interested, economists lack demonstrable knowledge. Similarly, on many questions which lie in the realm of values, economists are found to be in disagreement. On

[3] Schedule IX: 140 respondents.

[4] The question of the market for college graduates and the adequacy of the supply of trained professional personnel has become a lively issue in recent years. Prof. Seymour E. Harris in *The Market for College Graduates* (Cambridge, 1949) emphasizes the possibility that we may be on the verge of an oversupply of professional talent. Several other investigations are apparently proceeding from the assumption that there is a shortage of trained professional personnel—especially in the natural sciences and engineering—and are oriented toward finding ways to increase the supply. See: M. H. Trytten, *Human Resources and the Fields of Learning* (A preliminary mimeographed report of a survey under the auspices of the Conference Board of Associated Research Councils, Committee on Specialized Personnel); Commission on Human Resources and Advanced Training, *Plans for Studies of America's Trained Talent,* Washington, 1951; American Council on Education, *The Production of Doctorates in the Sciences: 1936-1948* (mimeographed), Washington, 1951.

these questions, the statements and recommendations of economists sometimes become little more than reflections of personal opinion. As a result, doubt is cast on the validity of all economics and on the usefulness of all economists—sometimes even to the point of ridicule. Indeed, the opinion has frequently been expressed that any interest group can find an economist who will publicly support its position. Since opposing interest groups can also find their economists, the net result of economic advice, as viewed by the public, is sometimes confusion with overtones of bad faith.

There are also other factors tending to lower the prestige of economists. To many people, their main function is to predict business conditions or security prices. Since economists have not been conspicuously successful as business forecasters, the tendency is to repudiate economists altogether. To other people, economists are odiously linked with bureaucracy, or with onerous governmental controls, or with schemes for economic "planning." Still others regard economists as "theorists" in the sense of visionary and impractical men.

A recent study of public attitudes toward various occupations and professions suggests that the prestige of economists is embarrassingly low. In this study, opinion data were gathered through personal interviews with a cross-section of the American public on the relative status of 90 occupations ranging from supreme court justice to bootblack.[5] Included in this list were several learned professions. Table 9 presents a list of selected occupations included in the study with the ranking of each.

In this list, it is noteworthy that "college professor" is placed relatively high with a rank of 7, that most of the learned professions are in the first 25, and that "economist" stands well below *all* the other learned professions included with a rank of 33.[6]

In interpreting these data, however, it should be recognized that 22 percent of the respondents were unable to express a judgment on

[5] National Opinion Research Center, *National Opinion on Occupations, Final Report of a Special Opinion Survey Among Americans 14 and Over Conducted in March, 1947* (mimeographed). This study was conducted under the sponsorship of Professor Paul K. Hatt of Northwestern University who has kindly granted permission for use of the results here. The ranking of each occupation was computed on the basis of a weighted average of the percentage of persons classifying the occupation excellent, good, average, somewhat below average, and poor.

[6] The report on the study states: (p. 4) "If it is found that certain occupational groups have extremely low social status in the eyes of the public, the findings delineate the areas in which remedial public relations are needed. If a certain group (e.g., scientists in general) is found to have quite high social status, that group can infer it has a reasonably good chance to get a respectful hearing from the general public." Also, (p. 21): "County judges, psychologists, sociologists, economists, and bartenders rate higher in the northeast than in other regions."

TABLE 9.—RANKING OF OCCUPATIONS, BY STATUS[a]

Occupation	Rank	Occupation	Rank
U. S. Supreme Court Justice	1	Psychologist	22
Physician	2	Civil engineer	23
State governor	2	Sociologist	26
Cabinet member	4	Owner of small factory	26
Diplomat in U. S. Foreign Service	4	Accountant for a large business	28
Mayor of large city	6	Biologist	28
College professor	7	Captain in the regular army	31
Scientist	7	Building contractor	33
U. S. Representative	7	ECONOMIST[b]	33
Banker	10	Instructor in the public schools	33
Government scientist	10	County agent	37
Minister	12	Railroad engineer	37
Priest	15	Farm owner and operator	39
Architect	15	Radio announcer	40
Chemist	15	Bookkeeper	50
Dentist	15	Garage mechanic	61
Lawyer	15	Milk route man	70
Board member of large corporation	15	Dock worker	81
Nuclear physicist	15	Shoe shiner	90

[a] National Opinion Research Center, *op. cit.*
[b] Of the respondents, 25 per cent rated economist as "excellent," 48 per cent "good," 24 per cent "average," 2 per cent "somewhat below average," 1 per cent "poor," and 22 per cent "don't know."

"economist" and responded "don't know." This percentage was higher than that for any other occupation except "nuclear physicist" and "sociologist." The low status of economists may be explained in part by lack of knowledge.

Conclusion

The economists of the United States are a small heterogeneous group without strong professional consciousness or powerful professional organization. They face public attitudes that are often indifferent and sometimes hostile. Their status as viewed by the public is lower than that of other learned professions. Nevertheless, economists exert an important—and probably growing—influence in American life—an influence that is entirely disproportionate to their numbers or to the offices they hold. This influence is due primarily to the increasing public interest in economic affairs, an interest which has grown out of this generation's experience with depression, war, inflation, high taxes, enlarged scope of government, labor conflict and the world-wide threat to the capitalistic system itself. The advice of technically trained economists is sought by government, private business firms, trade associations, labor unions and other groups. Economists frequently appear as expert witnesses before Congressional Committees and public boards. Because economics has become a leading study in schools and colleges,

and because citizens of all classes have become intensely interested in economic affairs, economists are able to exert significant influence through their teaching, writing, and lecturing. Frequently the research studies and theoretical investigations of economists lead the way to new public policies in fields such as taxation, banking, anti-trust, labor legislation, foreign trade, or national defense.[7]

It is not to be inferred, however, that most economists are sitting at the right hand of policy-makers guiding the destiny of the country day by day and in detail. The great majority of economists work in relatively obscure and even humble jobs as teachers, as research workers, and in various minor posts as administrators or research assistants. Few of them ever see, much less advise, Senators or Cabinet Members or leading businessmen. Only a few economists ever occupy positions of direct power and influence or are consulted directly by men of decision. Yet the influence of all is felt and their combined impact is very great. Collectively they are custodians of our accumulated economic knowledge from the past, they are scholars continuously extending this knowledge and advancing new ideas, they are teachers patiently disseminating this knowledge, and they are consultants applying it to particular policy problems. The role of those few economists who are in direct contact with policy-workers should not be over-emphasized. They serve as one link by which the knowledge of the entire profession is transmitted to those who can make use of it. The other—and perhaps more important link—is education in all its ramifications. It is primarily through education at all levels that the knowledge of professional economists is brought to bear on social problems. I know few economists who are not also educators in some sense.

The recruitment, selection, and education of the individuals who are to join this profession is a matter of grave concern not only to the profession itself but also to the entire nation. The future of our kind of society depends largely upon our ability to manage economic affairs successfully in relation to our values. It is vital to the future of our society that successive generations of economists be trained who will have the technical skills, the broad perspective, the judgment, the leadership, and the sense of social responsibility necessary to advance the frontiers of knowledge in the field and to translate this knowledge into practicable solutions for social problems. The remainder of this study will be devoted to a discussion of the education of professional economists.

[7] For an interesting discussion of the role of economists, see: "The Economists," *Fortune*, Dec. 1950, pp. 108-112.

Chapter 4

OBJECTIVES AND STANDARDS IN GRADUATE EDUCATION

On the general objectives of graduate education in economics and the standards which derive from these objectives, I have consulted with many economists, employers of economists, graduate students, and others, and have observed graduate education in operation at many universities. I have tried to formulate the objectives and standards with a view to their practicability and acceptability to a considerable body of opinion in the profession. I cannot claim, however, that this discussion represents an authoritative statement of the views of the entire profession or of any large segment of it. It represents only my own view of the matter reached after wide consultation.

In some respects my consultation on the subject of objectives and standards was disappointing. I found that objectives and standards actually operative cannot easily be communicated to an outside observer. Faculty members have difficulty not only in achieving an objective view of the standards which they actually employ but also in expressing these standards in concrete and specific terms. An observer, on the other hand, finds difficulty in interpreting the objectives and standards of any given institution on the basis of its practices which he can know only superficially and remotely. The actual objectives and standards of an institution are to be measured not by the verbalizations of professors, by statements in glossy brochures, or by the casual observations of an outsider, but by the day-by-day experiences of students—by the courses, the examinations, the dissertations, and the actual judgments of advisers and examining committees.

I was impressed nevertheless by the fact that there are many social and institutional forces making for relative uniformity—at least in the *formal* objectives and standards actually operative in various universities. First, graduate departments of economics are ordinarily located in graduate schools which attempt to establish relatively uniform procedures and standards as laid down by the Association of American Universities and other accrediting agencies. Second, the migration of staff members from one university to another—as they go from their own graduate schools to posts in other universities or as they move from one university to another—makes possible continuous comparisons of the standards of various universities. Third, the less renowned universities, which are usually eager to gain in prestige and to avoid any suspicion of low standards, characteristically try to fol-

low the example of leading universities, and are extremely conservative as regards deviation from standard practice. Fourth, the lowering of standards by any institution becomes known within the profession and places that institution in a position of disrepute which it will eventually try to correct.[1] Fifth, attempts to raise standards very much above generally accepted levels are defeated in most institutions by the fear of adverse effects on student enrollments. All these levelling factors have resulted, I think, in fairly similar standards and fairly uniform conceptions of such terms as "master's degree," "Ph.D.," "doctoral dissertation," "graduate student in economics," etc.

I do not mean to imply that there are no differences among universities in objectives and standards, or in quality of graduate instruction, but only that there are strong nation-wide tendencies toward the institutionalization of practices and of formal objectives and standards.

Where differences exist I believe they are due partly to differences in the quality of students attracted to the various institutions. It is easy to say that each department should admit only those students who have demonstrated a high level of ability. But if a department which is geared to do graduate work, which thinks of itself as a graduate department, and which possibly needs graduate assistants fails to attract students who meet this abstract standard, it will be strongly tempted to lower admission requirements. Having admitted substandard students such a department will hardly want to deny all of them degrees. But more important, the faculty's concept of a proper standard will be influenced by the performance of the actual students they know. Their concept of a "good student" or an "average student" will be modified. Accordingly, the admission of students of low quality will have the ultimate effect not only of lowering operative standards but also of lowering abstract or ideal standards as well.[2]

General Objectives

Graduate education in economics, in this country, consists of a program of studies which can be completed in a minimum of three years by a well-prepared and capable student. The program culminates in the award of the Ph.D. However, only about one out of 10 students

[1] This corrective process is, however, by no means automatic or inevitable because the faculties of some departments do not have enough contact with the profession-at-large to make the force of professional opinion effective.

[2] It is in this way that the master's degree may have become depreciated as a result of the pressure on secondary teachers to earn such a degree; similarly the Ph.D. may have been depreciated by the pressure on college teachers to take doctorates. The result of such pressure was the admission to graduate school of many persons who could not meet accepted standards, thus to lower the average quality of graduate students, eventually to lower both operative and ideal standards.

who enter graduate study in economics ever receive the Ph.D. The others drop out at some earlier point—some after only a few months of graduate study, others at the completion of the master's degree, some prior to the preliminary examinations for the Ph.D., and some prior to completing the doctoral dissertation.[3] Many of those who do not push through to the Ph.D. nevertheless pursue careers as economists or careers in which economic education is useful. Thus, in the graduate program in economics, various individuals spend different amounts of time—the amount in each case depending upon objectives, capabilities, and personal circumstances.

The primary objective of the great majority of these persons is to prepare themselves for positions in which they will use their economic education. In this sense, it is vocational or professional education.[4]

Table 10 presents data on the immediate and longer-range career objectives of respondent graduate students who were in residence during 1951-52. These data indicate that about one-fourth of the first-year students are headed toward higher education, another fourth toward government, and more than a third toward business—many of the latter hoping for executive or operating jobs. In the longer-run, somewhat more of the first-year students are hoping for jobs in higher education and somewhat fewer for jobs in government and business. The advanced graduate students, on the other hand, are predominantly directed toward higher education. For most of them government and business are second choices. My conversations with graduate students at many institutions revealed, however, that many of those who prefer teaching do not consider it a strong preference. The figures on career objectives of present graduate students (table 11) correspond closely with the actual positions held by former graduate students in economics.[5]

Many observers deplore the tendency of students and others to look upon graduate education as vocational training. In particular, they object to the specialization that sometimes results from efforts to train people for specific jobs. They argue that the purpose of graduate work

[3] For estimates of student mortality, see p. 92.

[4] "The graduate school has become a professional, even a vocational, school giving professional and vocational training in the same spirit as the law school, the medical school, or the business school. It receives the products of the liberal arts colleges and prepares them for certain trades, industries and professions. It manufactures technologists whether in philology or physics. It leaves general education to the college. If it concerns itself with research, it is only because, as a teaching problem, research activity is one part of the training of many kinds of technologists, but by not means of all of them." Howard Mumford Jones, "Post-War Planning for the Graduate Schools," paper presented at the 17th annual meeting of the Deans of Southern Graduate Schools, October 19, 1943, p. 11.

[5] Cf., Table 1, p. 10.

TABLE 10.—CAREER OBJECTIVES OF GRADUATE STUDENTS IN RESIDENCE DURING 1951–52[a]

	First-year students[b]		Advanced students[c]	
	Immediate	Longer-run	Immediate	Longer-run
Higher education, total	25%	34%	79%	69%
Teaching	19	28	54	58
Research, administration and other	6	6	25	11
Government, total	24	20	11	15
Research	10	6	7	7
Administration	14	14	4	8
Business, total	38	25	6	7
Economic work	14	3	4	2
Executive and other	24	22	2	5
Other	10	12	2	2
No answer	3	9	2	7
Total	100	100	100	100

[a] Schedule IX.
[b] 59 respondents.
[c] 81 respondents.

is to produce scholars—persons who have a deep and broad knowledge of their subject and of its development, who are intent upon a life of study and investigation, and who are interested in contributing to the advancement of the field. They argue that while it is well for scholars to find jobs, yet scholarship should not be compromised in the interests of vocationalism. In opposition to this point of view, others hold that scholarship is highly desirable in its place but that there are many specialized technical jobs for which competent people must be trained and that one of the tasks of graduate schools is to provide this training.[6]

Most economists are not perturbed by this conflict of objectives. On the whole, they believe—at least in their field—that the objectives of scholarship and of vocationalism can be reconciled. They believe that the best preparation for professional work in economics consists of education having as its objective the development of scholars. They are almost unanimous in their condemnation of specialized programs of study with vocational emphasis. They believe that the task of graduate education is to produce scholars who have an understanding of the fundamentals of economics and the tools of research in the

[6] Cf., President's Commission on Higher Education, *Higher Education for American Democracy*, Government Printing Office, Washington, 1947, pp. 86-9.

TABLE 11.—FIRST REGULAR EMPLOYMENT AFTER TERMINATING GRADUATE WORK, AND EMPLOYMENT IN 1952, OF FORMER GRADUATE STUDENTS IN ECONOMICS[a]

	Persons who received Ph.D. in 1939–1940[b]		Persons who received Ph.D. in 1949–1950[c]		Persons who received master's degree in 1939–40 and 1949–50[d]	
	First regular employment	Employment in 1952	First-regular employment	Employment in 1952	First regular employment	Employment in 1952
Higher education	85%	67%	78%	71%	22%	25%
Government	9	22	11	18	24	20
Business						
Economic work	2	7	4	5	6	7
Executive & other	2	4	3	2	32	31
Other	2	—	1	2	7	4
No answer	—	—	3	2	9	13
Total	100	100	100	100	100	100

[a] Schedule X.
[b] 45 respondents.
[c] 119 respondents.
[d] 54 respondents.

field. They feel that individuals with this equipment can adapt to specific vocational tasks easily and quickly. They are under no illusion that all graduate students will in fact become scholars, but they are firm in the conviction that education designed to produce scholars will in the end also produce the most capable technicians.

They are led to this conclusion partly by the tradition of economics, which is a scholarly tradition, and partly by the nature of the subject matter of their field. Economics is largely a study of the economic system. The economic system is a complex mechanism, all the parts of which are interdependent and no part of which can be grasped until it is understood in its entirety. It is an evolving system, the present form of which cannot be understood without reference to its prior development. And ideas and theories about the system cannot be fully understood without reference to the intellectual heritage from which they have emerged. For these reasons, most economists believe that a person who wishes to function successfully in the profession—whether in a governmental bureau, a business firm or a college—will be well-advised to aim for broad and fundamental knowledge of the field such as would be obtained by one who expects to devote his life to scholarly research. It is true that not all professional activities of economists

require great erudition. Not everyone need be, or can be, a great scholar. But all require knowledge of fundamentals and breadth of understanding.

There are other impelling reasons for this emphasis upon fundamentals. First, it is recognized that a finished economist cannot be produced in the few short years of a graduate school program. Mastery of this field, like any other scholarly field, requires a lifetime—not one to three years. The problem of graduate education, therefore, is to concentrate on those aspects of the subject which can best be acquired through formal education and which will best launch the student on a lifetime of self-education. The problem is to teach people how to learn, not merely to teach them specific subject matter. It is precisely the fundamentals—e.g., economic theory, economic history, history of ideas, and research techniques—which are most efficiently acquired through formal education and which provide the groundwork for later self-education. As one eminent businessman wrote in a letter to me:

> One of the great dangers of the present day is the unwillingness of technical students to realize that they are merely learning the rudiments of their profession and that once they get into practice they will be living the history of their profession rather than merely utilizing what they learned during their training period.

Second, in their graduate years students often do not know precisely what work they will follow. Therefore it is best at that stage to concentrate on those aspects of the subject having wide applicability. This point is strengthened by the fact that many economists shift in the course of their careers from one kind of employment or activity to another. Indeed, the frequency and the ease with which economists shift back and forth between teaching, government, and business is further evidence that the work of economists—wherever they may be placed—has a significant common element and that much the same kind of formal education is appropriate for all economists regardless of their specific jobs.

All of these considerations lead to the conclusion that, even though the employment opportunities of economists are expanding into new fields, the formal education of economists should place emphasis on fundamentals and scholarship.[7]

[7] Some of my critics have argued for changing the emphasis here. For example, one writes: "While I should agree upon the need of a common core for all, I think I should advise different emphasis for various groups. For those going into undergraduate teaching I should put a good deal more emphasis upon economic history, history of thought, and philosophy and somewhat less emphasis upon quantitative techniques. Whereas for those going into government service I should put a good deal more emphasis upon these quantitative techniques."

Standards

It is always tempting when considering educational philosophy to propose uniform and detailed minimal standards which all students of a given type or all candidates for a given degree should attain. Such uniformity may be possible in a field like accountancy, but it is probably not possible—and surely not desirable—in economics. There is need for economists of widely varied interests, capacities, and skills. Some should pursue historical studies, others should explore points of contact with social psychology; some should study the steel industry, others the Soviet economy; some should investigate the theory of employment, others linear programming; and these various specialists should interact with one another in mutually helpful criticism.

There can even be diversity among universities. It is not necessary for each one to provide opportunities for formal study in all of the fields or from all points of view: some can specialize in one direction and some in another according to their facilities, staff, and financial means. The only problem is to insure for the nation as a whole that a flow of competent persons will be forthcoming to enter all of the various sub-specialties of economics.

The need for variability suggests that it would be unwise for any professional association or accrediting agency to attempt to prescribe uniform standards or requirements for all graduate students of economics at each level. Economics as a discipline has not coalesced to the point of having an acknowledged set of requirements which every student must meet before he is eligible for a degree or for a license to practice. Yet it is possible and reasonable to advance certain standards to be applied to graduate students in economics.

In the remainder of this chapter, I shall attempt to formulate minimal standards that should be attained by candidates for the Ph.D. and for the master's degree at the time the degrees are awarded. In formulating these minimal standards, I have tried to avoid wishful Utopianism. I have attempted to consider the realistic conditions under which most graduate faculties work. Yet I feel that the minimal standards suggested are higher than those actually in operation in many universities. In my judgment, if these standards were scrupulously followed, the requirements for advanced degrees in economics would be raised perceptibly.

I should emphasize that these standards represent my own personal view arrived at in consultation with many interested persons. In no sense do they represent the official position of the American Economic Association or of any other group.

Standards for the Ph.D.

I shall try to express the standards to be met by a Ph.D. candidate under five headings: (1) personal qualities, (2) knowledge, (3) abilities and skills, (4) professional orientation and motivation, and (5) capacity for growth and adaptation. These standards are intended to apply at the time the degree is awarded, though of course they may influence standards for admission to, and advancement in, graduate study.

1. *Personal qualities.*
   - (a) *Intelligence.* In general "intelligence" or "scholastic ability," a Ph.D. candidate should rank at least among the top 15 per cent of all college graduates. This suggests that he should be the kind of person who might have earned mostly A's and B's in undergraduate work in a good university or college, or who might have been among the top 15 per cent of all college graduates in his score on appropriate intelligence tests.[8] This standard is expressed in terms of undergraduate grades or intelligence tests because course grades in graduate work are notoriously undiscriminating.
   - (b) He should be a person capable of intellectual maturity and judgment.
   - (c) He should have the emotional stability necessary to function in the kinds of positions economists are called upon to fill, i.e., he must be sufficiently adjusted that he can be conscientiously recommended for a position.
   - (d) He should be a person of integrity and good character.
2. *Knowledge.*
   - (a) *Common Core.* Although there is, and should be, great diversity among economists in their intellectual equipment and interests, neverthless there is a substantial nucleus of subject matter which should be common to all economists regardless of their special interests. It is this common core which should bind the profession together and should enable economists

[8] The upper 15 percent appears to be somewhat above current standards. As shown by Dael Wolfle and Toby Oxtoby, "The average person earning a bachelor's degree scores about 126 on the Army General Classification Test scale. About 10 percent of the total population earns a score this high. The average graduate student gets a score of around 129. About 7 percent of the total population does as well. The average Ph.D. in science makes a score of approximately 138. Only about 2 per cent of the total population makes a score that high." ("Distributions of Ability of Students Specializing in Different Fields," *Science*, Sept. 26, 1952, p. 311.) These figures suggest that the Ph.D. in science are generally in the upper 20 percent of all college graduates.

of all types and persuasions to communicate with one another. This common core consists primarily of economic theory including value, distribution, money, employment, and at least a nodding acquaintance with some of the more esoteric subjects such as dynamics, theory of games, and mathematical economics. Other important parts of the core are economic history, history of economic thought, statistics, and research methods. No one has a claim to a Ph.D. in economics without a rigorous initiation into these fields.

(b) *Special fields of economics.* Each candidate for a Ph.D. should be prepared in two to four special fields of economics in addition to the common core. He should present one of these fields as his major specialty. In that field he should have detailed and comprehensive knowledge. In each of the other special fields, his preparation should be equivalent to that which could ordinarily be acquired through a one-year graduate course and supplementary independent study. In case a student wished to present a field from the common core as his special field, e.g., economic theory or statistics, he should be permitted to do so by presenting evidence of mastery beyond that required for all students as part of the common core. The special fields should not be thought of as distinct and separate from the common core. Rather, they should be regarded as a vehicle for bringing the various concepts and methods of the common core to focus on a particular set of problems.

(c) *General knowledge of the entire field of economics.* Because the field of economics is broad and complex, it is not feasible for Ph.D. candidates to achieve intimate knowledge of every part of the field. Yet, the economy is a system, all the parts of which are interrelated and no part of which can be fully understood without knowledge of the whole. Regardless of his specialty, therefore, an economist is likely to find that some knowledge of most aspects of the subject will be useful if not indispensable. Every economist, regardless of his special field, probably should have some acquaintance with international economics, public finance, banking, agricultural economics, industrial organization, labor, insurance, business cycles, transportation, public utilities, etc. The need for this general knowledge extends to the various fields of business such as management, investments, corporation finance, personnel, accounting and marketing. Candidates for the Ph.D.

should demonstrate breadth of knowledge in many areas of economics outside the core and outside their special fields. Their knowledge in each area should approximate that which could be obtained by a careful reading of elementary "survey" textbooks in each of the fields. However, it is not to be inferred that they should be required to read these books or to take a multitude of elementary courses. It is suggested only that they should be required to gain breadth of general knowledge in economics. Much of this general knowledge is more or less spontaneously picked up by alert and intellectually curious graduate students as they enter into discussions with other students, hear lectures, look up factual points referred to in their reading, scan the news about current economic problems, etc. Yet the required breadth probably will not be acquired by most students without some special effort.

(d) *Research tools.* There are many research tools that can be put to the service of economics, among them, foreign languages, mathematics, accountancy, law, public opinion polling and other socio-psychological techniques, use of historical records and archives, and others. (Statistics is omitted here because it is regarded as a special field of economics included in the common core.) Each candidate should have enough knowledge of all these tools to understand how each can be useful. Indeed, a case could be made for requiring all Ph.D. candidates to achieve considerable competence with each of these tools. Yet this seems wasteful and unnecessary since not all economists use all of these tools. On the other hand, it is important that a steady flow of economists be produced who do have competence in each of these fields. For example, while it may not be necessary for every economist to have a knowledge of mathematics, it would be desirable to turn out many who can use mathematics. While it may not be necessary for every economist to know Russian or German or Chinese, it would probably be useful to have some with knowledge of these and of other languages. I should argue, therefore, that every Ph.D. candidate should be required to demonstrate the ability to use at least *one* important research tool that is relevant to his special interests. This means more than the passing of a perfunctory examination such as the present foreign language examinations have become. It means that the student must demonstrate ability to use at least one research tool effectively. If

the tool is a language, he must be able to read difficult materials rapidly and accurately. If the tool is mathematics, he must be able to read mathematical literature with facility and to use mathematics in his own research—not merely to have a superficial knowledge of "mathematics through calculus," etc.

(e) *Fields outside economics.* Broad as is the field of economics, the candidate for the Ph.D. has need of general knowledge—in some cases quite specific knowledge—outside economics.[9] He needs to know something of logic, scientific method, ethics, world geography, world history, history of ideas, industrial and agricultural technology, law, government, international relations, psychology, and current social and political events. Much of this background he may have acquired in his undergraduates years and much of it he may have absorbed through general reading and daily living. But not all of it comes to him automatically. He should specifically be required to repair gross defects in his general intellectual background before he is awarded a Ph.D.

3. *Abilities and skills.*

(a) *Reading.* A candidate for the Ph.D. in economics should be able to read with comprehension any literature in the common core except literature involving higher mathematics or some unusual technical apparatus. He should be able to understand its relevance to problems and issues. He should be able to place it in the stream of the history of ideas. He should be able to interpret it to others and to discuss it intelligently. If his special field is one in which mathematics or other unusual technical apparatus is commonly used, he should be able to read *all* literature in that field with comprehension. In fields of economics outside the common core and his special field, he should be able to read with comprehension all except the more difficult literature.[10]

(b) *Writing.* The candidate for the Ph.D. should be able to

[9] Cf. Association of American Universities, "Report of the Committee on Graduate Work," *Journal of Proceedings and Addresses,* 1948.

[10] It has been suggested that a Ph.D. should be able to read the *American Economic Review.* This journal is mentioned because the articles pertain chiefly to the leading sub-fields in economics and are chiefly non-mathematical. Some argue that this is too low a standard in the sense that any economist should be able to read more difficult literature than is in the *Review.* I have been told, however, by several experienced professors who hold Ph.D.'s in economics that this is too high a standard which they themselves would be unable to meet.

write either brief or extended discourses on subjects pertaining to economics. He should be able to write for both technically trained and lay readers. This writing should be logically organized, clearly expressed, and formally correct. It is perhaps too much to ask that it also be effective and interesting. The ability to write logically, clearly, and correctly is an essential part of the equipment of an economist, and every candidate should be required to meet this standard before receiving a Ph.D. Indeed, present requirements regarding literary ability are probably not as high as they should be. One of the most persistent criticisms by employers is that many economists—even those with the Ph.D.—lack adequate literary skill.

(c) *Speaking.* In almost every activity which engages professional economists, speaking ability is an asset. This is true not only in education but also in business and government. In the latter two fields, the ability to speak is needed more often in discussions, conferences, and negotiations; whereas in education it is needed for classroom presentation and public lectures. But in all of these employments, an economist's effectiveness derives partly from his facility in oral expression. In view of this, a Ph.D. candidate should be able to speak clearly and coherently before a class, a seminar, a public audience, or a committee. He should be able to do this before both technically-trained economists and lay groups. He should also be able to conduct himself effectively in conference or in informal discussion. Ability to participate effectively in informal discussion is perhaps the most important of the speaking (and listening) skills. The give and take of discussion is one of the best means of generating economic ideas and of subjecting them to the test of criticism and competition.

The standard for speaking should not be set too high, because ability in this field—perhaps even more than others—comes through experience. Yet the candidate should show sufficient facility to indicate that he is capable of adequate development. The standard for writing and speaking should be considered jointly. If a student is capable in written expression but weak in oral expression, or vice versa, the weakness in one can be partially offset by strength in the others. There are professional activities in which the use of each mode of communication is predominant. But if the student

is conspicuously deficient in both, there is grave question whether he can function effectively as an economist, and it is doubtful if he should be considered for a Ph.D.

(d) *Teaching*. At the completion of his Ph.D., the candidate should be prepared, at least in terms of mastery of content to teach the following courses: principles of economics, the first undergraduate course in his special field, and (given time for adequate preparation) intermediate economic theory. This standard should apply to all students—regardless of whether they intend to enter teaching as a career. A man who is unable to meet this standard will not be qualified for other professional positions ordinarily open to Ph.D.'s in economics.

(e) *Research*. Because research activities are so varied, it is difficult to define standards in this field meaningfully. Traditionally the Ph.D. has been regarded as a "research" degree, and the primary purpose of the educational program leading to the degree has been to train research scholars. It has been held that the dissertation should be a demonstration of the candidate's ability to make "important and original contributions to knowledge." This has implied that a candidate for the Ph.D. should be able to function at a very high level in research. The phrase "important and original contribution to knowledge" is still found in many graduate school catalogs, but in most departments of economics it does not form part of the operative standards or at most the phrase remains with the word "important" deleted. Only occasionally, in fact, does a dissertation turn out to be a significant contribution to knowledge. Today, the young Ph.D. is regarded not necessarily as a person who has made significant contributions to knowledge but rather as one who has (or should have) become generally oriented in the field and who has learned something about its basic methods of research.[11] It may be hoped that he will some day produce important research but that is not to be expected immediately. Even this hope is not held too sanguinely. As is well known, only a minority of Ph.D.'s ever produce important original research.

It is obvious, then, that a return to the older concept of the Ph.D. would represent a drastic tightening of standards

[11] Cf. Elbridge Sibley, *The Recruitment, Selection and Training of Social Scientists*, Social Science Research Council, New York, 1948, p. 83.

which would eliminate the majority of candidates. No one seriously proposes this. On the other hand, no one wishes to abolish all standards regarding competence in research. Perhaps the following are the things every candidate should be able to do before he is awarded a Ph.D.: (1) to utilize economic theory in analyzing the consequences of changes in demand, in supply of factors, in technology, in industrial organization, in governmental policy, etc.; (2) in some of the simpler cases, to devise procedures for testing the hypotheses suggested by theory; (3) to serve as a useful assistant or as a member of a research team, assuming responsibility for carrying out substantial blocks of work under the general direction of a mature research worker; (4) to initiate, design, and execute limited studies involving the collection and interpretation of primary data or the analysis of data collected by others. If these abilities were to be rigorously required, a substantial raising of present minimal standards would be involved. Nevertheless, these standards are more modest and more realistic than the older standard which purported to require an important and original contribution to knowledge. The obvious conclusion is that we cannot hope to make every Ph.D. into a Wesley Mitchell or a J. M. Keynes. We can, however, insist that they know something about the basic methods of research in economics and that they be able to apply these methods in relatively limited research situations.[12]

(f) *Writing for publication.* There is some question as to whether a condition for granting the Ph.D. should be the ability to write articles, reviews, monographs, books, etc., of a quality suitable for publication in recognized journals or through commercial channels. We have already considered literary ability and it is assumed that the candidate should be able to write logically, clearly, and correctly. The question here is whether he should be able to produce works the content of which would merit publication in a professionally reputable organ.

The traditional answer to this question was affirmative. This was part of the theory underlying the rule of mandatory publication of dissertations. But this rule has by now virtually disappeared and today there is little emphasis on pub-

[12] The requirements concerning teaching and research might be considered jointly in the same way as the requirements regarding speaking and writing. Excellence in one might offset deficiency in the other.

lication as a requirement in connection with the granting of the Ph.D. There are some, however, who decry the passing of the publication requirement and the standard it represented. At a few universities, an attempt is being made to institute another standard, namely, that a candidate for a Ph.D. should be able to write an article acceptable for publication in a leading professional journal. All admit that not every candidate could in fact get such an article accepted, if for no other reason, because there are simply not enough journals to carry articles by each year's crop of Ph.D.'s. But the proposed standard is not that the candidate should actually *publish,* but only that he should be able to write an article of approximately the same quality as those which are published. Others have proposed that a candidate should be able to write a publishable review of a book in his special field, still others that he should be able to write an elementary textbook in his field.

My judgment on this question is that publication has been grossly over-emphasized. For the same reason that most Ph.D.'s cannot be expected to make important and original research contributions, most of them cannot be expected to turn out writing of a publishable quality. Few dissertations are published either in entirety or in article form, and in fact many recipients of Ph.D.'s never produce significant publications. To hold rigorously to a publication requirement could have only two effects—both of them undesirable: either the drastic raising of standards so that only a fraction of the present flow of candidates could be awarded degrees, or the proliferation of second-rate publications and a drastic lowering of the standards required for publication. As it is, the emphasis on publication as a means to prestige and professional advancement has the undesirable effect of encouraging a flood of unimportant and unconsidered articles, papers, pamphlets and books. How much better if, in graduate school, students were led to become more reticent and self-critical concerning their intellectual output instead of being encouraged to publish whether or not they have something important to contribute.

But merely to say that the encouragement of publication has been overdone does not dispose of the problem of what standard to set for the Ph.D. candidate regarding writing. I believe that he should be able to do at least the following kinds of things: (1) write an acceptable memorandum,

addressed to his non-economist superior regarding some recent development in his field, reporting on a research project in which he has been engaged, or stating his views on a public policy proposal pertaining to his field; (2) write a short statement on some technical point or some recent event for the use of undergraduate students; (3) write a report for technically-trained readers on a research project in which he is engaged; (4) assist in preparing testimony to be given before a legislative committee; and (5) write critical analyses or syntheses of current literature in his field. In the above list, I have refrained in each case from indicating that he should be able to produce writing of a quality suitable for publication. I had in mind, however, that the quality should be very close to publishable. Indeed, I might concede that he should be able to write acceptably for publication in a house organ in the business firm where he is employed, in a specialized government document, in the kind of academic publications usually labeled "Studies In———." Perhaps he should be able to write a book review that would be acceptable for publication in a leading journal. But I believe it would be unrealistic to expect every Ph.D. candidate to be able (either immediately or at a more remote time) to contribute articles to a leading journal, to write for periodicals having national circulation, or to write books for commercial publication.

4. *Professional orientation and motivation.*

(a) The candidate for the Ph.D. should exhibit a serious interest in economics, a will to advance his knowledge of the subject, and a desire to make contributions to it. He should be dedicated to a life of study and investigation in the field. He should set high standards for his own professional work, and should hold shoddy or intellectually dishonest work in contempt.

(b) He should be imbued with the values that are traditional with scientific workers in all fields: namely, freedom of inquiry, freedom of expression, respect for logic and objective evidence, the obligation to report findings fully and accurately and to submit them to criticism, the desire to advance knowledge regardless of its immediate utility, and a concern to utilize the findings of science in ways that will benefit mankind. This value system is difficult to apply to economics, a discipline which operates in an area that bristles with

interest groups and ideologies. Economists, moreover, are part of the society they study. They are themselves members of interest groups and believers in ideologies. Therefore, scientific integrity and objectivity is for them much more difficult than for chemists, astronomers, or anthropologists. This means that the problems of scientific integrity and objectivity, which can almost be taken for granted in other fields, must be handled with special care in economics. An economist who wishes to follow the canons of science must be concerned with freedom of inquiry and freedom of expression even for those whose ideas he does not accept; he must have respect for logic and evidence even when they lead to conclusions he dislikes; he must report findings fully and accurately regardless of the interests that may be affected; and he must be interested in the advance of economic knowledge all along the line whether or not it supports his special views. It becomes incumbent upon economists, therefore, to attempt to understand their own ideological biases and to guard against them in their professional work. Economists must be constantly on guard lest they fail to distinguish between their beliefs and objective fact, or lest they subconsciously select evidence to fit their beliefs. The graduate school is the place where much can be done to help economists understand the perils of ideological biases and the meaning of detachment and objectivity.

This does not imply that graduate students should be decontaminated of all ideologies or that they should be encouraged to take passive or neutral positions on social issues. It implies only that they should become aware of the difference between belief and fact, that they should recognize their own personal biases, and that they should understand the nature of scholarly integrity.

5. *Capacity for growth and adaptation.*

Graduate study should be directed toward acquiring the fundamentals of the subject and toward erecting an intellectual foundation on which further building will be possible. In accordance with this objective, the graduate years should not be devoted to intense specialization. That is to come later. It is to be expected that in 10 or 20 years, after a candidate has acquired years of experience and self-education, he will be able to achieve many things which are beyond him as he emerges from graduate school. It is possible that

standards for the Ph.D. should be stated in terms of the kind of economist the candidate can reasonably be expected to become in 10 or 20 years, rather than in terms of his actual accomplishments to date. At any rate, it is evident that one of the standards should be capacity for satisfactory professional development. This capacity must be measured in terms of his motivation, initiative, and energy as well as his intellectual equipment; and in terms of his ability to adapt to new developments in the field as well as to carry forward present modes of thought.

Care must be exercised in applying this standard. It sometimes opens the way to rationalized laxity on the part of examining committees. It is easy for them to say, when faced with the unpleasant task of appraising a questionable candidate: "He isn't very strong, but he may develop given time for greater maturity and experience." I believe that this is usually sheer rationalization. In most cases, those candidates who do not meet the standards for the Ph.D. are the very ones who do not have the capacity for growth. Success in the graduate period is the most reliable index of the intellectual and motivational qualities that will lead to professional growth after the graduate years.

Conclusions Regarding the Ph.D.

I have presented a long array of minimal standards which might be employed in appraising candidates for the Ph.D. It is obvious that such an array of standards should not be applied mechanically. It is equally clear that it would be foolish to reject some candidate who failed to meet every single standard. For example, one might easily pass a candidate whose speaking ability was sub-standard. As one professor commented, "I would gladly grant a Ph.D. to a deaf mute if he had the required intellectual qualities." Similarly, one might not wish to hold rigidly to standards regarding writing ability, teaching, general knowledge, personal adjustment, or professional orientation. Rather, all of the standards should be regarded as a unified set of criteria by which candidates are to be judged. Ideally, a profile might be constructed for each candidate indicating his score with respect to each of the standards. Any candidate would be expected to score higher in some respects than in others. If a given candidate should fall below minimum on one or a few counts, this might be overlooked if his score on others were distinctly above the minima. However, none of the standards is unimportant or to be passed over lightly; hence, any candidate who falls below the minimum in any one respect should

fail unless he shows genuine distinction in some other equally important area. With some of the standards, of course, no compromise should be made. This would be true especially of general intelligence, motivation, preparation in the common core, preparation in the candidate's special field, and reading ability.[13]

These standards have been designed on the assumption that little differentiation is to be made between those students who are expecting to enter college teaching and those who are pointed toward research, consultative, and administrative positions in business, government, or research organizations. It has been frequently suggested that these two types of students should be set apart and given different types of education.[14] There is strong evidence that members of the economic profession do not favor such differentiation, although some would argue for more attention to the training of college teachers. Out of 27 institutions reporting, only 4 indicated that any effort is being made to differentiate the two types of students and these indicated that this was done only by means of informal adjustments in the programs of individual students. When graduate professors were asked to give an opinion on the desirability of such differentiation, the overwhelming majority were opposed. They felt that the diversity of student objectives is no handicap to the instructional program, and that the several types of students should have virtually the same educational programs.[15] The professors were almost unanimous in their opposition to the proposal that the graduate school should be divided into two units, one for the training of prospective college teachers and the other for the training of research workers. In short, most graduate professors feel that the task of the doctoral program is to produce *economists* who will have the basic equipment and flexibility to function in any of the vocational fields open to economists. They feel also that research training is essential in the education of college teachers.

On the whole, the above array of standards has been expressed in terms of what the candidate should know and be able to do rather

[13] One of my critics writes: "I have very mixed feelings regarding these standards. Sentence by sentence I agree with almost everything you say; yet as a whole I am somewhat uneasy. (a) You seem to be applying a double standard—an ideal one for things that can't be checked and a more realistic one for things that can be, (b) these are not in any meaningful sense minimal standards—though some individual ones are, (c) in the standards regarding knowledge, you ask too much and too little—too much breadth and too little depth."

[14] See, for example, Howard Mumford Jones, *Education and World Tragedy*, Cambridge, 1946.

[15] While most departments are oriented largely toward preparing college teachers, a few are attempting to specialize in training civil servants or economists for business. I do not mean to oppose such specialization so long as it does not result in inferior or narrow education.

than in terms of abstract qualities such as initiative, imagination, creativity, perseverance, self-discipline, critical facility, etc. This is not to imply that these qualities are unimportant. Quite the contrary. They are simply subsumed under the standards which are expressed, so far as possible, in operational terms.

To summarize the standards suggested, I can hardly do better than to quote from a report of the Committee on Professional Training of the American Chemical Society on the "Philosophy of Graduate Training at the Ph.D. Level:"[16] "The objective of graduate training at the doctoral level is to stimulate and develop in properly selected and qualified students the power for creative achievement in their chosen fields. In order to accomplish this these students must be given a thorough grasp of the fundamental sciences underlying their general fields of special interest. Their ability to recognize unsolved problems should be developed and they must be trained in the effective application of modern methods and techniques to the solution of these problems. They should be trained in logical thinking and should be helped to develop the ability to express themselves clearly and forcefully both orally and in writing. Their interest and enthusiasm for research and creative work should be fostered."

Standards for the Master's Degree

Opinions in the profession about the objectives of the doctoral program and the significance of the Ph.D. are much more clearly crystallized than those about the master's degree. There is a tendency in many quarters, quite mistaken I think, to belittle the master's degree, to regard it as an unimportant vestige, or even to eliminate it. It is spoken of as "a fifth year of undergraduate work" or "as a consolation prize" for those who can't qualify for the doctorate, or as a "catch-all" degree for those who want a little specialized graduate training, or as a "union card" for secondary school teachers. It is true that the master's degree is sometimes all of these things, but it does not follow that it is nothing more or that it should be despised, ignored, or eliminated.

A large part of the actual graduate teaching of economics is bestowed upon students who will never receive the doctorate. A great majority attend graduate school for only one or two years. The number of master's degrees granted each year is four or more times the number of doctorates awarded, and there are many students who receive no graduate degrees whatever. The great bulk of graduate study, then, is done in the earlier years or, roughly, at the master's level. Clearly,

[16] *Chemical and Engineering News*, Jan. 19, 1948, p. 167.

we should consider carefully the program in the earlier years of graduate study, the role of the master's degree, and the standards it should represent.

The many graduate students who do not attain the doctorate, and for whom the master's degree is likely to be a terminal degree, may be divided into six groups:[17]

1. Prospective secondary school teachers.
2. Those interested in specialized vocational training, e.g., security analysis, market research, specialized statistical work, etc.
3. Those merely adding a fifth year of education with career plans indefinite.
4. Prospective teachers in junior colleges or colleges who do not intend to try for the doctorate.
5. Those hoping to enter professional work as economists in government or business without commitment to a narrowly specialized field.
6. Those who hope to earn the Ph.D., many of whom will fall by the wayside before attaining the doctorate for reasons of intellectual deficiency, lack of motivation, inadequate finance, poor health, attractive vocational opportunities, etc.

On the basis of an inquiry to graduate professors and from data on the actual career objectives of graduate students (see table 10), I would judge that the percentages of first-year graduate students in each class would be about as follows:

Prospective secondary teachers	5%
Specialized vocationalists	5
Fifth year of liberal education	15
Teachers in higher education	10
Prospective economists in business and government	30
Prospective or hopeful candidates for the Ph.D.	35
Total	100

It may be properly argued that not all of these classes of students should have identical educational programs. Yet it can also be argued that only those who meet certain minimal standards should be granted the master's degree in economics. Perhaps other degrees should be used for those who want and deserve a master's but who do not meet the requirements for the master's degree in economics. But the degree

[17] Cf. New England Conference on Graduate Education, *Report of Subcommittee on Requirements for Master's Degree,* 1946.

in economics should be maintained as signifying a certain level of ability and certain achievements *in economics*.

Those who do not meet these standards may have excellent reasons for pursuing their particular studies, but they should not be awarded the master's degree in economics. Thus, if a prospective secondary teacher wishes to devote much of his time to the study of educational methods, or to the study of a variety of social sciences, without mastering the minimal requirements in economics, this may be entirely defensible, but it should lead to a degree in "education" or in "teaching of the social studies"—not in economics.[18] If an individual wishes to enter a program of study pertaining directly to security analysis or to statistical methods in sales forecasting or to some other aspect of a job, without meeting the requirements in economics, perhaps he should be permitted to do so, but he should not be awarded the master's degree in economics. Similarly, if a student wishes to round out his education with a fifth year of liberal education, without meeting the requirements in economics, he should be permitted to do so—but again without the expectation of receiving a master's degree in economics.

Nevertheless it can be argued that many students in each of these three groups would be wise to meet the requirements in economics rather than merely to pursue narrow vocational interests or to become dilettantes. My conversations with educators suggest that the profession of teaching social studies in secondary schools would be enriched if it included more persons who have substantial training in economics. At present, most teachers of the social studies are, quite properly, trained in history. Many believe, however, that it would be desirable if a somewhat larger number of these teachers were well-trained in economics (or in sociology or political science). Those who wish to pursue some specialized vocational training are often deluded into thinking that the only education they need is that which is directly germane to the particular job on which their attention is fixed. They sometimes forget that versatility and ability to develop come through laying a foundation on which many different kinds of skills can be based rather than through acquiring one specialized skill that is not easily transferable. If one wishes to be a forecaster of sales, it is better in the long run for him to know about the fundamentals of statistics and economics than to know the latest techniques for gauging next month's sales of toothpaste. Likewise, many of those who wish merely

[18] Cf. Roger P. McCutcheon, "The Master's Degree and the Teacher Requirements," *School and Society*, Sept. 22, 1951; and Committee on Graduate Work, Association of American Universities, "The Master's Degree." *Journal of Proceedings and Addresses*, 1945, p. 14.

to add a fifth year of general education may be well-advised to buckle down to a basic regimen in economics or some other solid field rather than to pick up scattered and unrelated samples of superficial knowledge. All of this argues for a solid program in economics leading to the master's degree for many students in the first three of the six groups listed above. And all students in the last three groups, it may be presumed, should be interested in such a basic program in economics. These include the prospective college teachers, the prospective economists in business and government, and those planning to go on to the Ph.D.

The conclusions, then, are (a) that only those students who measure up to the requirements for a master's degree *in economics* should receive this degree, and (b) that most students who are interested in some aspect of economic study probably would do well to try to meet these requirements. Apparently, a large majority of the profession agrees with this position. Only 4 of 50 reporting departments indicated that they attempted to offer separate programs for some of the several classes of students. In a questionnaire directed to graduate professors of economics, I asked if they felt that the diversity of career objectives among first-year students was a serious handicap to the instructional program. More than two-thirds answered in the negative, and only about 7 per cent gave an unqualifiedly affirmative response. I also asked if they felt that the several types of students should be distinguished and distinct programs arranged for some or all of the groups. More than half answered in the negative and only about 10 per cent were definitely favorable. Of those who answered negatively more than half indicated that the same type of program would be suitable for most or all students, and that minor variations in student needs could be easily handled on an individual basis. Others felt that the number of students does not justify several programs, that many students are too uncertain regarding their future plans to warrant further specialization, or that the creation of several programs would lead to undesirable specialization. I feel that all of these are cogent arguments. My conclusion is unequivocally that there should be one basic program and one degree for first-year graduate students in economics regardless of their ostensible career objectives, that this program should be flexible enough to take care of variations in individual backgrounds and needs, and that it should be rigid enough to insure that everyone who receives a master's degree in economics meets the standards which that degree should symbolize.

Regarding those students who are planning to proceed to the Ph.D., the issue is frequently raised as to whether they should actually take the master's degree on the way to the Ph.D. Only 7 of 36 reporting

universities ordinarily required the master's degree of students who are to become candidates for the Ph.D. About half recommend that the student take the master's degree en route to the Ph.D. A few universities are discouraging prospective doctoral students from taking the master's degree or at least are not requiring or encouraging them to do so.

In some universities, the master's degree is granted automatically to students who pass the preliminary examination for the Ph.D., and also to those who fail to pass the preliminary examination but who are nevertheless judged worthy of the master's degree. In others, the master's degree is ordinarily granted only to those who fail in the preliminary examination, and the degree thus becomes a kind of "consolation prize." In these institutions, those who pass the preliminary proceed directly to the doctorate without taking the master's degree at all. In either case, there are no special requirements or formalities for the master's degree. If the degree is granted, it is done merely as a perfunctory gesture or as a consolation prize.

This tendency to eliminate the master's degree as one of the steps to the doctorate is, in my judgment, a serious mistake.[19] It is a practice likely to result not only in further depreciation of the master's degree but ultimately in a deterioration of standards for the doctorate as well.

There are several reasons for this conclusion. First, the procedure by which the master's candidate prepares a thesis and submits to formal comprehensive examinations provides an excellent device for determining his fitness to proceed to the doctorate. A faculty advisor and an examining committee for a master's candidate are in a strong position to handle the difficult problem of eliminating unfit students. They can pass simultaneously on qualifications for the master's degree and fitness for further study toward the Ph.D. At this point the better students can be systematically encouraged and the unqualified weeded out. Second, the requirement of a valid master's degree in economics provides the leverage by which the student may be required to make up deficiencies early in his graduate career. By denying the master's degree until first things have been done, the student is forced to build a secure foundation for his later doctoral studies. Third, the necessity of meeting the requirements for the master's degree provides the student with an immediate and specific goal for his early graduate work. This helps to

[19] Cf., Committee on Professional Training, American Chemical Society, "Philosophy of Graduate Training at the Ph.D. Level," *Chemical and Engineering News*, Jan. 19, 1948. This report states (p. 167) "The master's degree should not be used as 'consolation' to a doctoral candidate who has proved to be unsatisfactory, but should be awarded only on its own merit to students who have demonstrated positive achievement well beyond the bachelor's level."

give focus to his early work and offers strong incentives to accomplishment. Fourth, the writing of a master's thesis is first-rate experience for the younger graduate student. Fifth, the requirement of a sound master's program in the early years would tend to insure a well-rounded education for those who are forced to drop out before completing their course work for the doctorate. Fewer would end up with incomplete or fragmentary programs. Finally, if these same students who were forced to drop out—many of them for reasons unrelated to their competence—were awarded a master's degree, they would be able to go forth with a definite and widely recognized symbol of their achievement.[20]

My conclusion, then, is that the great majority of students in the first year of graduate study should enter a basic, non-specialized program of study in economics and that this program should lead to the award of the master's degree to those completing it successfully. Those who do not see fit to enter such a program—even for the best of reasons—may well be permitted to pursue their studies and may well be granted degrees of some kind but they should emphatically not be awarded the master's degree in economics. That degree should be reinstated as one signifying a substantial accomplishment in economics and a level of professional competence as an economist.

If the objective of revaluating the master's degree is to be achieved, one practice all too common in American universities must be discontinued. This is the practice of granting the master's degree after one year's graduate work—after the accumulation of so many hour's credit—almost regardless of the student's prior achievements or his general "mastery" of the field. As one professor puts it: "Our master's program accepts the student as he emerges from undergraduate school and takes him as far as he can go in one year." The master's degree should be awarded on the basis of standards of achievement, not on the basis of clock hours devoted primarily to repairing deficiencies in the student's background.[21]

[20] Many but not all graduate professors agree with the position that the master's degree ought ordinarily be taken on the way to the Ph.D. When queried on this point 27 out of 59 graduate professors were in favor, 16 thought it depends on the individual student and his needs, 10 thought that the taking of a master's doesn't make much difference, and 6 were opposed. One of my critics who agrees with my general position said, "While, in general, doing the master's degree is a good thing, I find occasional very good students who understand researching, organizing, and writing up materials and who therefore make better use of their time if they do not take the master's." I do not disagree with this but I believe (as does my critic) that there are relatively few such students.

[21] Cf., Committee on Graduate Work, Association of American Universities "The Master's Degree," *Journal of Proceedings and Addresses*, 1945, p. 6. This report states (p. 9): "This degree should represent successful completion of an educational experience one stage beyond the Bachelor's degree both in specialization and in the character of the subject-matter

Having argued for the reinstatement and revaluation of the master's degree in economics, the question remains: What should be the minimal standards by which master's candidates should be judged? In general, the criteria would be similar to those for the doctorate except that standards would represent a generally lower order of ability and achievement.

1. *Personal qualities.*
   (a) In general "intelligence," a master's candidate should rank at least among the top third of all college graduates—as measured by his undergraduate grades or his achievement on appropriate tests.[22]
   (b) He should have the motivation, initiative, and energy for further professional growth, though not necessarily at the rate required of a Ph.D. candidate.
   (c) He should have the emotional stability necessary to function in the kinds of positions economists are called on to fill.
   (d) He should be a person of integrity and good character.
2. *Knowledge.*
   (a) *Common Core.* He should have a knowledge of economic theory equivalent to that which could be obtained in rigorous one-year graduate courses for which undergraduate intermediate theory and money and banking is a prerequisite. His knowledge of theory should include value, distribution, money and employment. He should have a knowledge of statistics such as could be acquired in a solid half-year graduate course for which an elementary undergraduate course is a prerequisite. It is possible that economic history and history of economic thought would not be included in the core for the master's candidate, though of course they would be highly recommended.
   (b) *Special fields in economics.* Each candidate for a master's degree should be prepared in one or two special fields in addition to the common core. If one field is offered, his preparation should be the equivalent of what could be obtained in a

studied and the manner of presentation. An ideal requirement for the attainment of this degree is the kind of intellectual development and demonstrated performance that could be expected from a student who has had broad and thorough undergraduate preparation for his subsequent work, has manifested scholarly interests by his undergraduate record or otherwise, and has zealously devoted himself for at least one year to work as a graduate student under the active guidance of able scholars and teachers and with the proper use of adequate library and laboratory facilities, all (or at least a great majority) of the courses pursued being at a level which presupposes knowledge of the elements of the subject-matter studied."

[22] Cf., "The Master's Degree," *op. cit.*, p. 13.

one-year graduate course. If two fields are presented, his preparation in each should be equivalent to what could be obtained in a half-year graduate course. In case a student wished to present a field from the common core as a special field, he would be permitted to do this by presenting evidence of mastery beyond that required for all students. All students should write a master's thesis or equivalent in the major field.

(c) *General knowledge of the entire field of economics.* A master's candidate cannot be expected to have the breadth of knowledge required of a candidate for the Ph.D. However, he should have a knowledge of perhaps three fields, in addition to his common core and special fields, equivalent to that which could be obtained by taking any undergraduate "survey" course in the field or reading an elementary textbook.

(d) *Research tools.* The master's candidate should not be required to show proficiency in any research tools (except statistics which is covered under the common core).

(e) *Fields outside economics.* The master's candidate should not be expected to show the breadth of knowledge required of the Ph.D. However, he has presumably completed a liberal education and should be held for a range of knowledge such as a graduate of a liberal arts college, placed in the upper third of his class, could reasonably be expected to have, plus that which an intellectually curious and alert person would have acquired independently. He should be specifically required to repair gross defects in his general intellectual background before he is awarded a master's degree.

3. *Abilities and skills.*

(a) *Reading.* A candidate for the master's degree in economics should be able to read with comprehension any of the easier professional literature in the common core and in his special fields and he should be able to understand its relevance to problems and issues.

(b) *Writing.* He should be able to write correctly and with logical organization, brief or fairly extended discourses on subjects in his special fields.

(c) *Speaking.* He should be able to present an economic subject before a class or small group, and to explain a point in an informal discussion. The requirement in speaking should be thought of jointly with the requirement for writing and high competence in one should substitute for deficiency in the other.

(d) *Teaching.* Under supervision, and with time for preparation, he should be able to teach the first undergraduate course in principles of economics.

(e) *Research.* He should be able to carry on limited research projects under general supervision, or to serve as a useful research assistant under the detailed supervision of a mature research worker. He should be able to use economic theory to a modest degree in analyzing the effects of changes in economic variables and in formulating research hypotheses.

(f) *Writing for publication.* The master's candidate should not be required to be able to produce manuscript that is at a level of quality acceptable for publication. He should, however, be able to write acceptable memoranda and reports. The writing of a thesis should be both preparation to meet this requirement and a test of the student's ability to meet it.

4. *Professional orientation and motivation.*

(a) The candidate for the master's degree should exhibit a serious interest in economics, and a desire to continue his study of the field.

(b) He should have achieved a degree of objectivity and critical facility in matters relating to economics, and a respect for logic and evidence.

5. *Capacity for growth and adaptation.* The candidate for the master's degree should have the motivational pattern and the intellectual equipment necessary for professional growth and for adaptation to new developments in the field. A person who has completed the requirements for the master's degree but shows no ability or inclination to grow or to carry on further work in the field should probably not be awarded the degree.

I believe that these standards are in accord with much of the thinking of graduate professors of economics although they apparently seldom consider standards or educational objectives explicitly in terms of what the student can *do* as distinct from what he *knows*. When a group of graduate professors were queried on their conception of the "knowledge, abilities, and personal qualities" which a master's degree in economics should symbolize, they provided a variety of responses. Many of them emphasized analytical ability, facility in the use of theory, and a grasp of "economic relationships." Some stressed the ability to read economic literature, to write, and to teach. Others thought that knowledge of sources of data, of research techniques, and of practical ability to do research work under supervision are of prime importance. A few mentioned knowledge of current policy issues,

awareness of "intellectual issues," knowledge of economic history and institutions, objectivity, maturity, curiosity, etc.

My discussion of the master's degree in economics has been predicated on the assumption that it should become a significant degree representing substantial achievement and ability; that most graduate students in economics should be candidates for this degree in the early portion of their graduate study; and that among the students who should take the degree are those who are planning to work toward the Ph.D. To adopt the conception of the master's degree here outlined would require a substantial raising of standards and tightening of requirements in many universities. I believe that the result would be a desirable raising of the level of competence in the profession generally even if it should result in a reduction in the number of students receiving degrees.

Experience in the universities which are attempting to maintain standards for the master's degree at about the level suggested here indicates that more than one academic year is usually required for the completion of the master's degree. Apparently, only the most unusual and well-prepared students finish in one academic year. Most students require from a summer session to a year of additional time. Students with assistantships often take 2 full years.[23]

Attitudes Toward Present Standards

To learn something about the extent of satisfaction with present standards for the master's degree and the Ph.D. I asked graduate professors of economics this question:

> What percentage of the students whom you are turning out with master's degrees or Ph.D.'s in economics have, in your opinion, a knowledge of the field of economics and an ability to use this knowledge that is commensurate with your concept of what a master's degree or a doctorate in economics should signify?

The responses were as follows:

	Master's Degree[24]	PhD.[25]
Half or less	13%	20%
More than half; less than three-quarters	10	5
Three-quarters	13	9
More than three quarters; less than 95 percent	39	27
95 percent or more	7	5
No answer	18	34
Total	100	100

[23] Cf., Association of American Universities, "Report of the Committee on Graduate Work," *Journal of Proceedings and Addresses*, 1945, p. 6.

[24] Schedule IV: 61 respondents.

[25] Schedule VII: 59 respondents.

Those who felt that a significant number of degrees are awarded to persons who do not measure up explained the failure in several ways. Some thought it was due to inadequate prior preparation of students, lax admission standards, or inadequate attention to the weeding out of unfit students. Others attributed it to failure on the part of the faculty to define standards and to apply them faithfully once defined. Others said it was a policy to use the master's degree as the device for gently easing out students who are unqualified to proceed to the doctorate. And some thought the trouble lay in the shortcomings of faculties or of facilities for the proper training of students. In general, the blame was usually placed on the faculty in one way or another.

Apparently many of the respondent professors felt that present standards are somewhat ambiguous or in need of careful formulation, since a majority expressed themselves affirmatively on this question:

Do you believe that a useful purpose would be served if the American Economic Association or some other qualified agency were to define minimal standards for the master's degree and the Ph.D. in economics?

The replies to this question were:

	Master's degree[26]	Ph.D.[27]
Yes	51%	32%
Yes, qualified	23	24
Uncertain	8	12
No	13	24
No answer	5	8
	100	100

[26] Schedule IV: 61 respondents.

[27] Schedule VII: 59 respondents.

Chapter 5

RELATIVE QUALITY OF GRADUATE STUDENTS IN ECONOMICS

Economists everywhere are interested in the question of whether the graduate students attracted into the field are of a quality superior or inferior to those who enter other fields of graduate education and other learned professions. Evidence on this subject is difficult to obtain, and such evidence as is available cannot easily be appraised. Fortunately, additional data on this subject are being collected by the Commission on Human Resources and Advanced Training under the direction of Dr. Dael Wolfle. But from this important and ambitious study only certain preliminary results are available as I write.

Evidence from Graduate Record Examinations

The most comprehensive data on the relative quality of graduate students in various fields are provided by the results from the Graduate Record Examinations. These tests, devised to aid in appraising candidates for admission to graduate school, have been given since 1937 to many thousand prospective and enrolled graduate students. The tests were originally developed as a research project of the Carnegie Foundation for the Advancement of Teaching and are now administered by the Educational Testing Service of Princeton, N.J.

In 1947 a comprehensive report was published comparing the scores of graduate students in various fields who had been accepted for admission during the years 1945-47.[1] To avoid biased samples, only those students were included who were in graduate schools requiring the examination of all members of a class. This restricted the data to 41 graduate schools and 5,972 students. Comparative data by major fields were made available for the 24 fields which were represented by 50 or more students.

The tests for which comparative data are available are the profile tests in eight parts: mathematics, physics, chemistry, biology, social studies, literature, fine arts, and verbal factor. The results of the tests are in the form of a set of scores on each of the eight parts. The scores are expressed on the basis of scales in which 500 is the average score of the original standardization group (a highly selected sample of pre-war male students in universities of Northeastern United States) and

[1] The Graduate Record Office, *The Performance of Accepted Graduate Students on the Profile Tests, 1945-1947,* New York, 1947.

TABLE 12.—GRADUATE RECORD EXAMINATION PROFILE TESTS: MEAN OF SCALED SCORES BY MAJOR FIELD OF STUDENTS TESTED[a]

Major field of students tested	Subject of tests								
	Mathematics	Physics	Chemistry	Biology	Social studies	Literature	Fine arts	Verbal factor	Number tested
All fields combined	436	449	447	449	382	408	422	403	5,972
Biology	420	455	495	554	343	394	409	405	86
Zoology	441	487	497	591	354	387	432	413	74
Chemistry	524	557	597	510	379	395	418	407	455
Biochemistry	500	534	582	546	353	383	421	402	55
Mathematics	578	516	478	442	383	412	406	421	129
Physics	577	614	527	472	392	393	432	443	159
Engineering	561	568	533	443	357	338	379	364	366
Agriculture	464	500	496	524	322	314	336	339	85
History	381	397	397	411	461	455	453	423	262
Political science	415	428	402	421	461	419	439	423	171
ECONOMICS	441	440	425	422	446	417	428	431	125
Sociology	395	406	412	425	416	420	426	419	116
English literature	394	390	393	421	421	521	472	466	368
Speech and drama	383	404	395	415	373	460	445	396	167
Philosophy	432	441	419	420	451	494	467	500	54
Music	374	391	374	360	342	398	509	371	73
Education	402	411	407	420	351	376	388	361	1,078
Psychology	426	446	436	480	393	421	441	447	268
Business	459	454	417	397	377	357	379	337	116
Home economics	393	404	453	495	321	365	400	339	68
Library science	364	366	381	411	383	466	454	420	129
Social work	361	363	384	425	383	425	432	399	213
Medicine	425	494	500	565	345	375	401	408	82
Nursing	402	426	494	527	352	412	438	422	64

[a] Graduate Record Office, *The Performance of Accepted Graduate Students on the Profile Tests*, 1945–47, New York, December 1947, pp. 16–27.

the standard deviation is 100. Table 12 presents the mean scores for each part of the test for students who were majors in various fields including economics.

These data indicate that the profiles of the scores for students of various fields differ significantly. Those in the natural sciences tend to have higher scores in mathematics and natural science and lower scores in the social studies and humanities; students of the social studies have relatively higher scores in the social studies and the humanities, and lower scores in the natural sciences; etc. Economists apparently tend to have fairly horizontal profiles. Their performance on each part of the test is not far from that for the average of all students except in the social studies portion where it is significantly higher.

Among the 24 student groups included in table 12, the rank of students of economics in the various parts of the test were as follows:

Mathematics	8th
Physics	13th
Chemistry	14th
Biology	16th
Social Studies	4th
Literature	10th
Fine Arts	13th
Verbal factor	5th

From these results one gains the distinct impression that students admitted to graduate study in economics are near the average of students in all other fields. In no field are the scores of economics students markedly lower than those for all students combined.[2] Their scores tend to be relatively low in the natural sciences and relatively high in mathematics, social studies, and verbal factor. The fact that they are relatively high on the verbal factor portion is significant because this possibly measures general "intelligence" more adequately than any other part of the test.

Evidence from Other Tests

The commission on Human Resources and Advanced Training has collected and summarized a mass of data on mean intelligence scores of undergraduate and graduate students by major fields.[3] Some of these data, as summarized by the Commission, are presented in tables 13 and 14. The data are converted to a common scale in which the mean for the general adult population is 100 and the standard deviation is 20.

Five scores are given for each field, one each for the 10th, 25th, 50th, 75th, and 90th percentile. In interpreting these scores, one should visualize that the students in each group are arrayed, with respect to their scores from the lowest to the highest. The scores for the 10th percentile would then be the score of the person at the top of the lowest ten percent, the score for the 25th percentile would be the score of the person at the top of the lowest 25 percent, etc. For a single comparison of the fields, the 50th percentile, or the median, would be most useful, but the other percentile scores would reveal the distribution of scores.

As tables 13 and 14 show, the scores for students of economics are very near those for "all fields combined." According to these data, students of chemistry, other physical sciences, and psychology show

[2] The Graduate Record Examinations are strongly weighted toward the natural sciences in that three parts are devoted to physics, chemistry and biology; whereas, only one part is devoted to the social studies. This tends to make the profiles appear more favorable to the students of natural science—especially physicists and chemists—than to the social science students.

[3] See: Dael Wolfle and Toby Oxtoby, "Distribution of Ability of Students Specializing in Different Fields," *Science*, Sept. 26, 1952, pp. 1-4.

TABLE 13.—DISTRIBUTION OF APTITUDE TEST SCORES OF RECENT RECIPIENTS OF BACHELOR'S DEGREES FROM 40 COLLEGES AND UNIVERSITIES, BY MAJOR FIELDS[a]

Major field	Percentile scores				
	10th	25th	50th (median)	75th	90th
All fields combined	112	119	126	133	140
Chemistry	116	123	130	137	145
Other physical sciences	116	123	132	138	149
Earth sciences	114	120	126	134	139
Biological sciences	112	119	126	133	140
Psychology	113	119	128	135	142
ECONOMICS	114	120	127	134	142
History	110	118	125	132	139
Other social sciences	108	115	123	131	137
English	114	121	128	136	143
Foreign Languages	114	121	128	135	142
Philosophy and other humanities	109	118	123	133	139
Fine Arts	112	119	126	132	140
Engineering	115	122	129	137	145
Agriculture	114	119	124	130	137
Home economics	100	110	118	124	130
Nursing	113	119	125	134	143
BUSINESS	111	117	124	131	137
Education	107	116	123	131	136
Physical education	99	110	117	124	134

[a] Wolfle and Oxtoby, *op. cit.*, p. 2. The sample includes about 10,000 students.

relatively high scores; and students of physical education and home economics rank relatively low. It is noteworthy, also, that students of business stand several points below students of economics.

Still further information on the relative test scores of graduate students in economics, as compared with those of other fields, is derived from results of tests administered in 1950-51 in a leading university to students entering graduate study. These results are confidential and cannot be published except in summary form. On a scale in which the average of all graduate students at that university was 500, the mean scores for 28 economics students on the several tests given in 1950 were 482, 507, 445, 465, and 494; and the scores for 29 students on tests given in 1951 were 483, 482, 481 and 490. On the tests given in 1950 economics students as a group, out of 24 fields, ranked

TABLE 14.—DISTRIBUTION OF APTITUDE TEST SCORES OF GRADUATE STUDENTS RECENTLY ENROLLED IN 42 UNIVERSITIES, BY MAJOR FIELDS[a]

Major field	Percentile scores				
	10th	25th	50th (median)	75th	90th
All fields combined	114	121	129	137	144
Chemistry	118	126	134	142	148
Other physical sciences	122	129	136	143	148
Earth sciences	114	121	129	137	144
Biological sciences	117	123	131	138	145
Psychology	123	130	137	143	149
ECONOMICS	114	121	130	138	145
History	114	121	129	136	144
Other social sciences	114	121	129	138	145
English	120	126	134	141	147
Foreign languages	115	123	131	140	148
Philosophy and other humanities	117	126	135	142	148
Fine arts	112	119	126	135	143
Engineering	118	123	131	139	145
Agriculture	121	127	132	138	144
Home economics	110	116	121	127	130
Medicine	119	125	132	138	145
Dentistry	112	118	126	134	142
Other health fields	116	123	131	138	145
BUSINESS	112	119	126	133	140
Education	113	119	127	134	139
Physical education	108	115	120	125	129
Law	117	120	129	133	140
Social work	112	119	126	132	138

[a] Wolfle and Oxtoby, *op. cit.*, p. 2. The sample includes about 4,500 students.

from 12th to 19th on the various tests. On the tests given in 1951, with 17 fields reported, the economics group ranked from 9th to 15th. At this university, graduate students in economics are evidently below the average of all graduate students.

Dr. Elbridge Sibley, in his study *The Recruitment Selection and Training of Social Scientists,*[4] compiled data on the relative standing in their classes, as measured by grades, of undergraduate students majoring in various disciplines at five colleges. He classified the stu-

[4] Social Science Research Council, Bulletin 58, New York, 1948, pp. 23-28.

TABLE 15.—SCHOLASTIC RANKING OF UNDERGRADUATE STUDENTS IN FIVE COLLEGES, BY MAJOR FIELDS[a]

Field	Percent outstanding	Percent superior	Percent mediocre and inferior	Total	Number of students
All fields	7%	27%	66%	100%	1,989
Divisions					
Social science[b]	7	25	68	100	763
Mathematics and natural science	10	37	53	100	388
Humanities[c]	8	26	66	100	476
All other fields	6	19	75	100	362
Selected Departments[d]					
Economics	6	24	70	100	240
Government	3	29	68	100	104
History	9	26	65	100	116
Psychology	7	25	68	100	59
Sociology	5	16	79	100	57
Mathematics and physics	19	32	49	100	78
Biology	5	37	58	100	175
Chemistry	11	43	46	100	54
Languages and literature	9	25	66	100	305
Business administration	2	15	83	100	60
Engineering	8	13	79	100	78

[a] Sibley, *op. cit.*, p. 24. Data for students at Amherst, Brown, Harvard, Oberlin, and Chicago.
[b] Includes anthropology, economics, geography, government, history, psychology, and sociology.
[c] Includes foreign languages.
[d] Includes only departments reporting more than 50 students.

dents into three groups: (1) "outstanding," those in the top 7½ percent of students; (2) "superior," those in the next 26½ percent of students; and (3) "mediocre and inferior," all others. The percentage distributions of students in each of several disciplines are shown in table 15. The percentage of outstanding and superior students in the natural sciences and humanities exceeded that in the social sciences. In economics, the percentage of outsanding and superior students was slightly less than that for the social sciences in general and for all fields. The percentage of outstanding and superior students was conspicuously less for business administration than for economics. As Dr. Sibley was careful to point out, grades are not an infallible measure of the relative quality of students, especially when comparisons among students in different disciplines are being made. However, he obtained consistent results with a group of students in the two-year college of

the university of Chicago, all of whom took substantially identical work in college but later majored in different fields.[5]

In connection with the Graduate Record Examination, data have been compiled on the mean scores earned by college seniors on tests of general education.[6] Out of 31 major fields, the students of economics ranked, in the various parts of the examination, as follows:

General Mathematics	9th
Physical Science	13th
Biological Science	21st
Social Studies	3rd
Literature	17th
Arts	22nd
Effectiveness of Expression	16th
Vocabulary	16th
General Index	17th

From the results of examinations for Junior Professional Assistants, the U. S. Civil Service Commission has compiled the comparative scores of those designating economics as their option and those designating other fields. The median scores for the group taking the examination in December 1951 were as follows:[7]

	Verbal ability test	Quantitative ability test	Abstract reasoning test
economists	40	21	35
bacteriologists	38	19	35
geographers	38	20	34
geophysicists	41	26	39
social science analysts	42	20	35
statisticians	41	23	38

On a similar examination given in 1941, data on the percentage of persons passing the general test were as follows:

economists	84%
administrative technicians	87
chemists	80
geologists	80
meteorologists	84

Relative Ability of All Graduate Students

In comparing graduate students of economics with those of other fields, it must be remembered that graduate students as a whole are a

[5] Sibley, *op. cit.*, p. 26-27.

[6] These data are available in mimeographed form from the Educational Testing Service, Princeton, N.J.

[7] These data were kindly supplied by Mrs. F. W. Luikart, Chief of the Examining and Placement Division.

highly selected group. To say that economics students are near the average of all graduate students, is not to say that they are second-rate; the total population of graduate students with whom they are being compared is composed of a highly-gifted group. Dr. Wolfle and Dr. Oxtoby have shown,[8] that only about 10 percent of the total population of this country earns test scores higher than the average for all college graduates, only about 7 percent of the total population earns scores higher than the average for all graduate students; and only about 2 percent earn scores higher than the average of Ph.D.'s in the natural sciences.[9]

To show the relative order of ability of all graduate students, Dr. Sibley compiled data on the graduates of the five colleges included in his study, by occupation or field of graduate study. As shown in table 16 the college graduates who attend graduate schools of arts and sciences include a high percentage of outstanding and superior students as compared with those who do not enter graduate study of any kind, and also as compared with those who enter the study of business administration, law, and medicine.

A related study of graduates of the High School of the University of Minnesota who have taken advanced degrees confirms Dr. Sibley's results. The mean intelligence quotients of this group, by type of advanced degree, are as follows:[10]

D.D.S.	112
M.D.	123
LL.B.	127
Master's	127
Ph.D.	132

The fact that graduate students rank about as high as medical students (in some studies higher) is of special interest because of the extreme care with which the latter are reputedly selected. Available evidence indicates that in terms of college grades and scores on tests, medical students are not necessarily more gifted, as a group, than students in graduate schools or arts and sciences. See tables 12, 14, and 16.

Concluding Comments

Certain very general and tentative conclusions can be drawn from available data on the quality of students who enter graduate work in

[8] *Op. cit.*, p. 1. Cf., data on distribution of Army General Classification Scores by highest year of school completed, President's Commission on Higher Education, *Higher Education for American Democracy*, Washington, 1947, Vol. 6, p. 11.

[9] Comparable data not available on the social sciences.

[10] Royal B. Embree, *A Study of the Graduates of the University High School from 1921 to 1945 with Special Reference to Their Subsequent Academic Careers*, Ph.D. Dissertation, University of Minnesota, 1947, p. 495, 516.

TABLE 16.—SCHOLASTIC RANKING AS UNDERGRADUATES OF GRADUATES OF FIVE COLLEGES, BY OCCUPATION OR FIELD OF GRADUATE STUDY[a]

Occupation or field of graduate study	Percent outstanding	Percent superior	Percent mediocre and inferior	Total	Number of students
Total	7%	27%	66%	100%	1,989
No graduate study reported	3	23	74	100	1,091
Attending graduate schools of arts and sciences	20	37	43	100	331
Social sciences[b]	23	29	48	100	117
Mathematics and natural sciences	21	52	27	100	122
Humanities[c]	14	27	59	100	92
Attending vocational or professional schools	8	29	63	100	567
Business administration	4	26	70	100	94
Law	8	38	54	100	158
Medicine	7	34	59	100	119
Other schools	10	19	71	100	196

[a] Sibley, *op. cit.*, p. 32. Data for graduates of Amherst, Brown, Harvard, Oberlin, and Chicago.
[b] Includes anthropology, economics, geography, government, history, psychology, and sociology.
[c] Includes foreign languages.

economics. First, graduate students in economics are apparently well-rounded; i.e., they have relatively equal abilities on the various portions of tests. They are apparently neither outstandingly deficient nor proficient in any field of learning. This is revealed by the horizontal form of the profiles of economics students as compared with those in other fields (see table 12). Second, economics graduate students tend to be near the average for all graduate students (see tables 12, 14, and 15).

Of interest because of the close relation of economics to the field of business, is that students of business administration apparently make somewhat poorer showings on the various scores than students of economics (see tables 12, 13, 14, 15, and 16).

Any conclusions drawn from the data presented must be interpreted with caution. First, the samples from which the data are drawn are limited. Second, it is possible that some of the tests may be designed in such a way that students with particular talents or training will be able to make better scores than others. Differences in the scores might then not reflect differences in basic ability or intelligence. Third,

the ability to make high scores on intelligence tests or high grades is not the only criterion of the quality of students. Indeed, studies of the relation between test scores or undergraduate grades and "success" in graduate schools seldom yield correlation coefficients above 60 or 70. While this is considered high for this type of correlation, yet it suggests the presence of important factors in graduate school success other than ability to make high scores on tests or a good undergraduate record. Fourth, the attractiveness of various fields to bright students may change according to the times. It is possible, though I have no evidence, that economics had greater attractiveness to good students in the 1930's than it has today; and that today the physical sciences may be relatively more attractive as a result of enormous publicity.

It is easy to find arguments for questioning or ignoring test scores and undergraduate grades as a measure of the relative quality of students in various fields. Yet, the general consistency of the data from several sources indicates that these results cannot be lightly dismissed.

Members of the economic profession can take some satisfaction from the fact that the new recruits into the profession are in ability near the average for all graduate students. This is near the average of a very select company. They can also be pleased that there are many new recruits who are far above average. However, they should not become complacent on the basis of the average or near-average ability of the new recriuts.

The average for all students includes fields such as fine arts, music, physical education, education, dentistry, home economics, and social work—fields which do not ordinarily draw the cream of graduate students or which do not require high proficiency in academic subjects. Among the more traditional academic fields, economics is well below average.

The profession would do well to proceed on the assumption that the average ability of students attracted into economics is lower than it should be in relation to the intellectual demands of the field and its importance in our national life.

Chapter 6

RECRUITMENT AND SELECTION

The usual avenue by which young men and women enter the profession of economics is graduate study. The procedures in the recruitment and selection of persons who are to study economics at the graduate level is, therefore, a major factor determining the quality of future personnel in the field. I believe that the profession is not fully meeting its responsibilities in recruitment, and selection.

Evidence from professors and from employers of economists indicates that for many years there has been a ready market at prevailing salaries for persons with graduate work in economics. But there is no critical shortage of economists in the same sense that there is said to be a shortage of engineers or physicists. Current quantitative demands for economists hardly justify an intensive campaign to recruit people into the field, and do not warrant sacrifices of quality in the interests of quantity.

The evidence of the preceding chapter suggests that the profession might wish to recruit more students of high quality and to reject some of the less capable ones now being admitted.[1] This raises the interesting question of how students now find their way into economics.

Decisions to Enter Graduate Study in Economics

As shown in table 17 the present and former graduate students responding to my questionnaires first decided to major in economics at widely varying times. Less than 10 percent had decided before entering college, about 40 percent had decided by the end of the second year of college, and only about three-fourths had decided by the end of their college careers. The time of decision to undertake *graduate* study in economics was still later. Only about a third had made up their minds prior to the fourth year of college, and only a little more than

[1] Apparently many graduate professors agree with this position. Most departments report that they are trying, through scholarships, personal advice, and assisting students to get scholarships elsewhere, to encourage good students to enter graduate work in economics. And most of them feel that greater efforts should be made to stimulate the flow of *good* students into the field. Many of them emphasize that it is more *good* students—not just more students—that is wanted. On the question of supply of personnel into economics, one of my critics writes: "One of our problems is to learn to use lesser talent more successfully than we do. I have the feeling the laboratory sciences do a better job of this than does economics. I believe, in any case, that we should treat talent as a scarce resource to be used as all other resources and we should try to meet the lack largely by having our society provide more in general rather than by pulling it from other fields."

TABLE 17.—TIME OF DECIDING TO MAJOR IN ECONOMICS AND DECIDING TO UNDERTAKE GRADUATE STUDY, GRADUATE STUDENTS AND FORMER GRADUATE STUDENTS[a]

	Decision to major in economics	Decision to undertake graduate study[b]
Before entering college	10%	12%
During first two years of college	32	9
During third year	21	13
During fourth year	11	35
After graduation but before entering graduate study	12	
After some graduate study in another field	11	
After being out of college:		
less than 1 year		9
1–2 years		7
3–5 years		8
more than 5 years		5
No answer	3	2
Total	100	100

[a] Schedules IX and X: 358 respondents.

[b] Cf., Elbridge Sibley, *The Recruitment, Selection, and Training of Social Scientists*, Social Science Research Council, Bulletin 58, New York, 1948, pp. 19–20. Sibley's data indicate that the decision to enter graduate study is made somewhat earlier by natural science students than by social science students.

two-thirds by the end of their college work. The remainder decided after graduation from college.

Tables 18 and 19 show the influences leading to those decisions as reported retrospectively by the individuals themselves. Most of them

TABLE 18.—INFLUENCES LEADING TO CHOICE OF ECONOMICS AS A MAJOR, GRADUATE STUDENTS AND FORMER GRADUATE STUDENTS[a]

	Percent reporting
Developed interest through high school social studies	1%
Developed interest from prior experience in government, business, or labor unions	6
Interested in economics	37
Interested in public affairs or social welfare	24
Advice or influence of relatives	5
Advice or influence of professors	13
Attractive professional or business opportunities	21
Other	10
No answer	4

[a] Schedules IX and X: 358 respondents. Percentages add to more than 100 because some respondents mentioned more than one influence. Cf. Horace Taylor (editor), "The Teaching of Undergraduate Economics," *American Economic Review* (supplement), Dec. 1950, p. 143.

say they chose economics as a major (Table 18) because they became interested in the field, presumably from experiences prior to college or from courses taken in college. The advice of relatives and professors and the desire for careers in the field were apparently secondary influences. It is notable that the number mentioning direct influence of professors was few as compared with the number mentioning interest in the subject.

Among the influences underlying the decision to enter graduate study (Table 19), interest in the subject is important, but more than half mentioned the desire to seek a career in teaching or other professional work as a primary motive.

Recommendations on Recruitment

Since the decisions to take up economics as a major field of study and to enter graduate school are ordinarily made—and should be made

TABLE 19.—INFLUENCES LEADING TO DECISION TO UNDERTAKE GRADUATE STUDY, GRADUATE STUDENTS AND FORMER GRADUATE STUDENTS[a]

	Percent reporting
Interest in economics; intellectual curiosity	33%
Advice or influence of relatives	7
Advice or influence of professors	8
Availability of scholarships or other financial aid	13
Desire for career as teacher	31
Desire for career in economics, teaching not mentioned	24
Other	11
No answer	5

[a] Schedules IX and X: 358 respondents. Percentages add to more than 100 because some respondents mentioned more than one influence.

—during the student's undergraduate years, the practical things that can be done to attract a larger number of capable students into the field are things that must be done in the undergraduate colleges.

The first of these, of course, is to interest more *good* students in majoring in economics. This is largely a matter of the quality of teaching and of text materials in the first courses. In institutions where the teaching of principles of economics is regarded as a hack job to be done by assistants, the prospect of kindling real interest is, of course, very slight. But this opens up a big question that exceeds the bounds of the present study.

A second, and much simpler suggestion, is to help undergraduate students to realize that there *is* a profession of economics, that it offers wide and varied opportunities, and that it is by no means a strictly

academic field like classical languages or medieval history. Young people often have direct acquaintance with law, medicine, dentistry, business, agriculture, engineering, and education. Fields like chemistry and physics are well known to them by reputation if not by actual contact. But they are unlikely to have known an economist or to have had the vaguest notion of what he does or of what opportunities are open to him. It would seem useful, then, for departments of economics to provide systematically some professional orientation for their undergraduate students.[2]

In my discussions with teachers of economics, I have found that many are themselves lacking in an understanding of the professional opportunities available to economists. Several have asked me: "What do you tell a student when he inquires about vocational possibilities in economics?" The answer is to be found, for example, in the admirable statement prepared by a Committee of the American Economic Association,[3] or perhaps in the first chapter of this study. It is obvious that economics is a growing and expanding field and that there are many socially useful, interesting, and reasonably remunerative careers for persons trained as economists. These facts should be brought to the attention of students—even in the first course. To do so would be not solely an act of proselyting but a proper educational task. It may be as important for students to know what an economist is and what he does in our society as to know about Gresham's Law or the kinked demand curve.[4] It is particularly important to acquaint students with these matters early, because the sooner the decision to become an economist is made, the more adequate can be the preparation for graduate study.[5]

Third, special attention should be given to counselling with superior students who have elected economics as an *undergraduate* major. This is not to suggest that all such students should be urged to undertake graduate study,[6] but only that the opportunities in professional

[2] Some departments do try to acquaint students with the possibilities of and the requirements for graduate work in economics, but I have the impression that much of this is very casual.

[3] "The Profession of Economist," *American Economic Review* (supplement), Jan. 1949, pp. 341-43.

[4] Sibley (*op. cit.*, p. 22) points out that the social sciences, unlike the natural sciences, give the undergraduate student no notion of what scholarly work in the field is like. Therefore, students have little chance of learning about the professional possibilities in the field and teachers have little opportunity to identify the students who ought to be encouraged to go on.

[5] Cf. Commission on Human Resources and Advanced Training, *Plans for Studies of America's Trained Talent,* Washington, 1951, p. 11.

[6] Cf. Horace Taylor (editor), "The Teaching of Undergraduate Economics," *American Economic Review* (supplement), Dec. 1950, pp. 139, 151.

economics should be pointed out to them as one promising option. Seminars for superior undergraduate students may be useful in acquainting them with what economists do.

Fourth, graduate departments of economics should have more scholarships for first-year graduate students to be used to attract the most promising students. In many institutions a large part of student aid is in the form of assistantships to second-year and third-year graduate students. It is desirable, of course, to give financial aid in the later years, but for recruitment of outstanding students, it is crucial to give such aid in the first year. If the student is not able to begin graduate work, he can never complete it. Moreover, in administering aid to graduate students, departments should take care that brilliant first-year students are not denied well-deserved aid while funds are used to support indifferent graduate students who have earned only seniority.

Fifth, graduate departments might well maintain close liaison with smaller liberal arts colleges and municipal colleges with a view to discovering and encouraging the more gifted economics majors who might undertake graduate work. This is being done systematically by the graduate colleges of several southern universities under grants from the General Education Board. With declining graduate enrollments, rivalry for *known* students of high ability has become unusually keen. But this is competition for students who have already decided to undertake graduate study and have made application for scholarships. Few universities have attempted to discover *unknown* talent. That is what I am suggesting. It should be worth at least as much time, trouble, and money for an economics department to discover a gifted economist as for a football coach to find a star halfback.[7]

Interesting and promising new schemes for the recruitment of graduate students in the social studies are the Woodrow Wilson Fellowships sponsored by the Association of Graduate Schools of the American Association of Universities, and the Undergraduate Research Stipends of the Social Science Research Council. The theory underlying both of these programs is to seek out superior young people and to encourage them to enter graduate work.

[7] See T. R. McConnell and L. A. Lovegren, *A Study of Assistants at the University of Minnesota* (mimeographed), Minneapolis, 1937. This study reported the tendency of departments at the University of Minnesota to grant financial aid to students who have done previous work at that institution, and (p. 11) to the "general lack of aggressiveness in recruiting promising graduate material." The study reported that ten of thirty-three department heads interviewed made an active search beyond the institution for outstanding assistantship applicants.

Admission

After recruitment, perhaps the most important factor determining the quality of professional personnel in economics is admission to graduate study.

The most general requirement for admission to graduate study in economics is a bachelor's degree, though a few universities permit some seniors to enroll in graduate courses prior to the completion of undergraduate requirements. Most graduate departments of economics also require a minimal grade average in undergraduate work. These grade requirement in 84 departments for which data are available are as follows:

Honors	4
B plus	4
B	33
B minus or C plus	15
Upper half of graduating class	4
C	3
No requirement	7
Other	2
No information	12
	84

Practice varies considerably regarding the specific substantive content required of applicants. Out of 84 departments for which data were obtained, 39 require that the applicant have completed an undergraduate major in economics (usually as the major is defined at the institution of application), 31 require "substantial background in economics or social science," 30 require a course in statistics, and 6 have no substantive requirements in economics. In the "tool" subjects, 13 departments require accounting, 8 require mathematics, and 8 require one foreign language. A few institutions require courses in fields other than economics or "tool" subjects related to economics; among these requirements are political science, sociology, history, commerce, finance, and laboratory science.

All except one of the institutions reporting indicated that there are provisions for students to repair deficiencies in their backgrounds while enrolled as graduate students. The provisions include enrollment in undergraduate courses without credit (19 out of 67 reporting institutions), requirement of additional courses (42), passing special examinations (3), and enrollment as a special student (2).

Entrance examinations as a condition of admission are given by only a few institution—8 out of 54 reporting. Among the examinations given are the Miller Analogies Test, certain of the Graduate Record Examinations, the G.E.D. social studies test, and a reading and com-

prehension test. In only 5 institutions, however, were the scores on these tests used as an important basis for deciding whether or not to admit individual students. Interviews are used when practicable in 31 out of 55 institutions reporting, and letters of recommendation by 30 institutions.

Personal and physical qualities of applicants are ordinarily considered by 10 of 53 institutions and sometimes considered by 5 more. The remaining 40 reported that they gave little or no attention to these qualities in connection with admissions.

About two-thirds of the reporting institutions (35 out of 51) indicated that their admission requirements are administered "strictly and virtually without exception." The remaining third reported that exceptions are made for borderline cases or for students who show unusual promise.

A special admissions problem exists for students who have completed some graduate work and who wish to go beyond the first year in quest of a doctorate. When the first year of work has been taken at the same institution, the problem is one of deciding whether the student should be permitted to go ahead. Out of 34 reporting institutions, 15 indicated that a student who has completed one year of work and has met formal requirements for good standing is automatically permitted to continue. Nineteen institutions stated that there was a screening process at this point—either in connection with the award of the master's degree or otherwise—and that only those students who were judged of doctoral caliber were permitted to go ahead. The problem is also present in the cases of those students who have completed some graduate work and wish to transfer to another institution for study toward the doctorate. Here practice varies enormously and it is difficult to generalize beyond the statement that grades and letters of recommendation are the principal basis of decision in each case. Personal and physical qualifications are considered more frequently in the case of applicants who propose to study for the doctorate than in the case of applicants who are seeking admission to the first year of graduate study.

Opinions Regarding Admission Practices

Apparently there is mild dissatisfaction among graduate professors of economics regarding admissions practices. As shown in table 20, only a minority judged that present procedures and standards are good, most considered them fair, and a sizeable minority thought them poor. On the whole they thought that admissions practices were more efficient in selecting students with adequate intellectual capacity and preparation in economics than in selecting those with adequate preparation in

"tool" subjects or with suitable personal and emotional qualities. Several of them commented, however, that they questioned whether it was a proper function of admissions policy to consider personal and emotional qualities of students. Some made the observation that the personally unsuited eliminate themselves soon after admission.

The respondent professors offered numerous suggestions for improvement in present admissions practices. Many thought that the basic problem is the small number of candidates from which to choose, and that the solution lies in attracting more applicants. Others felt that there is need for obtaining more reliable information on the candidates. They felt that less reliance should be placed on letters of recommendation or that ways should be found to make these letters more revealing. Others recommended that fuller and more accurate information on applicants should be obtained including better means of evaluating student records from smaller colleges. Several thought that personal interviews with students prior to admission should be used more

TABLE 20.—OPINIONS OF GRADUATE PROFESSORS REGARDING PRESENT PRACTICES IN THE ADMISSION OF GRADUATE STUDENTS[a]

Efficiency in selecting students who are adequate with respect to:	Good	Fair	Poor	Un-certain	No answer	Total
Intellectual capacity	27%	50%	17%	3%	3%	100%
Earlier preparation in economics	35	38	14	3	10	100
Earlier preparation in tool subjects	14	31	37	7	11	100
Personal and emotional qualities	19	32	20	20	9	100

[a] Schedules IV and VII: 120 respondents.

extensively. Some recommended that several samples of the applicant's written work should be evaluated. Others said that entrance examinations would be helpful. Many expressed the view that steps should be taken to improve the preparation of students prior to admissions—especially in the tool subjects. They suggested greater publicity regarding the content of desirable preparation for graduate study in economics, the requirement of certain courses in economics and certain proficiencies in the "tool" subjects, entrance examinations, and strict requirements regarding the repair of deficiencies after admission. Many merely suggested stricter standards for admission or more rigorous administration of present stardards. A few pointed out the need for more "ruthless" or "impersonal" attitudes toward applicants.

Admission Policy

On the question of selecting students for admission to graduate work, there are two distinct views. The first is that entrance requirements should be rigid, and selection careful, so that few students will be admitted who will be unable to qualify for the degree normally terminating their course of study. In those institutions which restrict themselves largely to a Ph.D. program, this would mean selecting only those first-year students who may be reasonably expected in due time to qualify for a Ph.D. Similarly, in institutions offering the master's degree, this would mean selecting only those students who are judged capable of proceeding to the master's degree. This view is based on the theory that facilities are limited, and that time and money should be reserved for those students who are able to profit fully from graduate study. As one professor expressed this viewpoint, "Every failure of a student is an indication of a mistaken admission." The second view is that admission standards should be relatively low, but that unqualified students should be weeded out early in the program. This view is based on the theory that it is not possible with present techniques to differentiate sharply between qualified and unqualified students except through actual experience in graduate work, and therefore that a highly restrictive admission policy will deny opportunity to many worthy students. In public institutions, moreover, it is felt that a sharply restrictive policy is likely to have adverse affects on public relations.[8] A third possibility, of course, is to achieve a compromise between these two views by having admission standards that are moderately rigorous. No doubt most actual admission standards lie somewhere between the two extremes.

My own view of the matter is that a middle position is desirable for most institutions. I do not have sufficient faith in available devices for screening candidates to be ready to advocate highly restrictive standards designed to admit no one who would later have to be dropped. The available devices consist of undergraduate grades, tests, interviews, and letters of recommendation. Studies of the prediction of success in graduate school based upon undergraduate grades and tests usually produce coefficients of multiple correlation no better than .60 to .75.[9] Such coefficients may be impressive, considering the nature of the problem and of the data. Yet to rely heavily on undergraduate grades

[8] Apparently graduate professors are about evenly divided on this subject. In response to my questions, 26 of 61 respondents favored a rigorously selective admissions policy, 25 favored a relatively lenient admissions policy with high mortality after admissions, and 10 offered no opinion.

[9] See, for example, G. V. Lannholm and W. B. Schrader, *Predicting Graduate School Success*, Educational Testing Service, Princeton, 1951.

and tests may easily do a great disservice to some of the students who are rejected. Interviews are seldom practicable, and letters of recommendation are notoriously unreliable. Thus, there is apparently no consistently reliable method of screening candidates in advance of admission.

On the other hand, it seems to me foolish to admit students whose academic record, test scores and letters indicate that their chances are negligible of ever being able to qualify for a degree.

The question is where should the line be drawn? The line will, of course, have to be drawn differently at different institutions. Those universities whose prestige or location give them drawing power will be forced to restrict themselves to the number of students they can adequately handle. The only sensible course for them is to try hard to choose the best students from among those who apply. Institutions of lesser drawing power may well offer the opportunity for graduate study to a wide range of students including some of those who may have been rejected by the more restrictive institutions. I believe that a case can be made, in the many institutions which have less than optimal enrollments, for admitting students whose chances of earning indicated degrees are judged to be at least one in two or three. Under this standard, some students who might squeak through to a degree would be rejected, but rarely would a really good student be passed by.

Apparently most institutions are not so crowded with graduate students in economics that this proposal would be impracticable. Only a handful of institutions (approximately 6) actually impose limitations on their enrollments or admissions of graduate students in economics, although a few more would apply such limitations if their enrollment ever reached a specified maximum. And only a small minority of professors (16 out of 120) reported that (in their opinion) there are too many graduate students in their institutions. A much larger number (51 out of 120) thought they had too few students for most effective work. Many felt that with the small numbers now in residence, there was too little competition, too small classes, too little inter-stimulation among students, and too little probability of drawing even a few good students.

The relatively lenient admissions policy I have suggested for all but a few institutions (this is not far from the policy now in effect at many of them) can be defended only if two important conditions are met. First, the weaker students who are admitted must be counselled in advance regarding the odds they are facing so that they will not be misled by the act of admission into false hopes and wasted time.[10] Second, the procedures for eliminating students who, after admission, are found to be unfit must be prompt and efficient.

[10] This can be done only if dependable information is available in advance of admissions.

A lenient admission policy, when these conditions are not met, can only result in sub-standard graduate education. If students of questionable ability are admitted without being warned of the odds they are facing, great courage will be required on the part of faculty members—more than most of them have—to drop such students after their inadequacy has been demonstrated. It is all too easy to let them stay until vested interests are so great that dropping them becomes an injustice. This tendency to retain poor students is strengthened by the desire, in many institutions, to maintain large graduate enrollments, and by the willingness to dispose of poor graduate students simply by granting them the master's degree—a degree which (mistakenly I think) is held in low esteem.

Another danger of a lenient admission policy, when not accompanied by rigorous screening after admission, is that standards will be adversely affected. The presence of students of low quality is a subtle influence toward lowering the standards of a department. The faculty conception of a "good student," an "average student," or a "poor student" is determined partly by the abilities of the students they see and know. The process of judging students consists partly of comparing one student with another, not merely of judging each student by some abstract standard. Therefore, in a department having a large number of students of low quality over a period of years, standards are likely to become lower than in departments which have rigorous policies of selection operating either before or soon after admission.

For all these reasons, my conclusion favoring relatively lenient admission policies in departments which have not exceeded their optimum graduate enrollment is valid only on the assumption that rigorous selection will occur soon after admission. The issue is not whether there should be selection, but only when it should occur and how it should be accomplished.

Substantive Preparation

The discussion of admissions, up to this point, has been concerned primarily with the general intellectual quality of students. Another issue concerns the prior substantive preparation of students who are to be admitted to graduate study. What kind of undergraduate background or prior preparation is desirable or indispensable?

There are two extreme opinions on this issue: One that the background of the undergraduate student is a matter of complete indifference so long as he has had a good liberal education; the other that specific background is important and that the student should not be admitted unless he meets certain definite substantive requirements. The second of the opinions is usually qualified by the assumption that a

student who lacks some of the requirements may be admitted to graduate study on the condition that he make up all deficiences, *in addition* to meeting the normal requirements for his degree. Much opinion lies between these two extremes.

On one point everyone is agreed, namely, that prior preparation is decidedly less important than the basic intellectual qualities of students. Everyone would prefer brilliant applicants with little or no preparation in economics or related fields to dull ones with the most meticulously appropriate backgrounds. But this does not dispose of the question. With students of given abilities, it is surely better to have them appropriately prepared than not. That prior preparation is no trivial matter is indicated by the responses of present and former graduate students. Of 358 respondents, 229 (64 percent) reported that they had been handicapped in their graduate work by inadequacies in their earlier training.

Those so reporting indicated that the following deficiencies constituted handicaps:[11]

Mathematics	41%
Economic theory	21
Statistics	7
Economics generally	25
Social sciences other than economics	12
Foreign languages	8
Literary ability	6
Lack of breadth	5
Faulty undergraduate training generally	14
Other	8

Similarly, few of the graduate professors queried indicated that they regarded substantive admissions requirements as unimportant. Most thought that a major in economics or at least several courses in economics were essential. Many specifically mentioned statistics and economic theory and a few suggested other specific courses. Regarding prior preparation in the "tool" subjects, few favored no requirement, but there was a wide variety of specific suggestions including (in order of frequency): mathematics, accounting, English composition, and logic and scientific method.

I discussed the issue of substantive background with many deans of graduate schools and professors in fields outside economics—in order to learn about the thinking and practices on this issue in other areas. I have found that in other fields—particularly in some of the natural sciences, the undergraduate major is relatively standardized throughout the country. It can be assumed that any person with a major in the

[11] Schedules IX and X: 358 respondents. The total adds to more than 100 percent because some respondents reported more than one deficiency.

field will have had a certain minimal sequence of courses and that the content of these courses will be similar wherever they are taught. In these fields, graduate work customarily presupposes a given undergraduate preparation and builds upon it. Undergraduate economics, on the other hand, is much less conventionalized. Majors in various institutions or even in the same institution may have had widely varied training. There is no generally accepted sequence of courses and no agreed upon content for given courses. This, combined with the fact that more than a third of all economics graduate students have not majored in economics in their undergraduate work,[12] means that those who knock at the door of graduate departments of economics bring with them the most widely varied backgrounds. There is a tendency, therefore, to assume that students start their graduate careers with little usable knowledge of economics and with little common experience in other fields. The training of an economist from first principles to the doctorate, then, occurs largely in the graduate years.

In my judgment, firm but gradual action should be taken to stiffen the substantive admission requirements. In the near future this could be done by a more rigorous policy of requiring students to make up deficiencies after admission to graduate school and by more rigorous standards for the master's degree. In the longer run, I am inclined to think that the profession should work toward the formulation of certain minimal standards for the content of the undergraduate major, and toward the requirement of the equivalent of this major for admission to graduate study of economics. There is no legitimate excuse for the wide diversity of preparation which now characterizes the graduate student bodies in most departments of economics.

While it is clear that not all of this diversity of background can or should be eliminated, certain minimal preparation might be insisted upon. The content of this minimum would be determined by deciding what things in the education of an economist can best be done prior to his admission to graduate school or what things after. In view of the long periods required by students to complete their doctorates in economics (on the average), a case can be made for getting as many things as possible out of the way before the graduate period.

In my judgment, an applicant should be prepared at the undergraduate level in principles of economics, elementary statistics, money and banking, intermediate economic theory, and in one or two other

[12] Among 358 present and former graduate students replying to my questionnaires, 216 (60 percent) majored as undergraduates in economics, another 41 (11 percent) in business, 37 (10 percent) in various social sciences outside economics, and the remainder in fields ranging from English to engineering. Cf. Sibley, *op. cit.*, pp. 68-71; also Sibley, "Education in Social Science and the Selection of Students for Training as Social Scientists," Social Science Research Council, *Items*, September 1951, pp. 25-29.

fields of economics. He should present a knowledge of mathematics through calculus and a rudimentary knowledge of the major concepts of accountancy. He should also have a breadth of knowledge, in fields outside economics, equivalent to that which the graduate of a good liberal arts college might be expected to have.

Background in fields outside economics is a crucial problem, in no sense secondary to background in economics. Many of those who argue that prior preparation in economics is unimportant do so on the ground that it is better for students to devote their undergraduate years to fields such as mathematics, history, sociology, government, philosophy, and foreign language—fields which are particularly helpful in the study of economics—rather than to economics itself. They argue that the student will be able to go further by building upon a broad background than by concentrating early on economics. There is much to be said for this point of view. Certainly, there is no merit in an undergraduate program consisting of course after course in economics and business to the virtual exclusion of other fields. However, the choice is not between the extremes. It is possible for a student to present a sound major in economics, including the basic courses mentioned above and several others, and still to acquire the desired breadth. This is the goal toward which admission policies should be directed.

As indicated above, the raising of admission standards cannot be done suddenly and without notice; otherwise the expectations of the present generation of prospective graduate students will be unjustly disappointed. However with advance notice, there is nothing to prevent an early but gradual stiffening of policy regarding the repair of deficiencies. Several universities already scrutinize candidates' backgrounds carefully and require that indicated deficiencies be made up promptly and without credit. One university has a special intensive course in economic theory, carrying no graduate credit, for those not yet prepared to take the standard graduate course. Other institutions having less rigorous policies might well consider tightening up. The requirements for the master's degree also might be raised so that the award of that degree would signify that the candidate had not only met all requirements for the degree itself but also had removed deficiencies in his background.

But the policy of requiring students to make up deficiencies should be regarded as no more than an expedient. It is an inefficient and psychologically undesirable way of handling the problem. Graduate advisers dislike the duty of assessing deficiencies and imposing the task of making them up. Students feel, quite rightly, that the making up of deficiencies is an unrewarding task which interferes with their immediate objectives. They are inclined, therefore, to shirk the job

their graduate studies if they suffer from deficiencies which are concurrently being repaired as they can if their preparation is adequate prior to graduate study. The only sound solution, ultimately, is to include the elements of an adequate preparation in the admission requirements. Students should be permitted to make up deficiencies concurrently with graduate study only if the deficiencies are slight or if there are exceptional circumstances. This would be possible and fair to all if the admission requirements for graduate study in economics were fully publicized.

Methods of Selection

In the selection of students prior to admission, the principal criteria are undergraduate grades, letters of recommendation, interviews, and tests scores. In practice, most universities rely heavily upon undergraduate grades and letters of recommendation; no doubt these will continue to be the principal basis for admission. Interviews are often found impracticable because of expense and inconvenience. Tests, like the Graduate Record Examinations, the Miller Analogies Test, and others are used by only a few departments and by them usually as an incidental or supplemental source of information.

The principal issue concerning methods of selection relates to the role of tests. Regardless of the particular admission policy being employed by any given institution, would more extensive use of tests aid in the selection of qualified graduate students prior to admission? A study of results from the Graduate Record Examinations indicates that these tests have been useful in predicting success in graduate school at several institutions and in many fields.[13] This study is based on experience at Columbia, Harvard, Indiana, Iowa, Michigan, Pittsburgh, Princeton, Vanderbilt, Wisconsin, and Yale. The results are not spectacular. Scores on the Graduate Record Examinations usually are not superior to undergraduate grades as predictors of graduate school success. Yet when the test scores are combined with undergraduate grades, the predictive ability is increased significantly. Even when the two factors are combined, however, the coefficients of multiple correlation seldom exceed .75 and are usually much below this figure.[14] Although tests have by no means made possible anything like certainty

[13] G. V. Lannholm and William B. Schrader, *Predicting Graduate School Success*, Educational Testing Service, Princeton, 1951. See also the earlier study: Carnegie Foundation for the Advancement of Teaching, *The Graduate Record Examination*, New York, 1941.

[14] The only data on the value of the Graduate Record Examination in predicting work in economics are from two studies at Harvard in 1939 based on samples of 24 and 60 students. Unlike investigations in most fields, these particular studies indicated that the use of test scores did not increase the ability to predict graduate school success over that with the use of college grades. In these studies the predictive value of college grades was

in the prediction of success in graduate school, it does not follow that they are useless. They do increase somewhat our ability to predict success and they may be justified on this ground alone. Moreover, by using tests and experimenting with them over a period of time, it may be possible to improve their predictive value.

But test scores are valuable not only for their predictive value but also because of what they reveal about the student—about his basic "intelligence," his mastery of economics, the breadth of his background, his strengths and weaknesses, and the gaps in his preparation. Some of these may not be highly correlated with success in graduate school but may nevertheless provide useful information for purposes of admissions, identifying deficiencies, student counselling, and later appraisals of the student. The new Advanced Economics Test which is part of the Graduate Record Examinations, impresses me as a very useful test, particularly if attention is to be given to the prior preparation in economics which the student brings to graduate school.[15]

But there is an even more important purpose to be served by tests administered prior to admission. They would help each department gain some knowledge of the quality of its applicants *relative* to those of other institutions and of its admission standards and policies *relative* to those of other universities. If the tests were to serve this purpose, it would be essential that all universities use identical tests; that all employ the same examining procedures; and that the scores of students applying, students admitted, and students rejected be made available by all institutions for purposes of comparison. The data could be made available in such a way as to conceal the identity of particular institutions.

In my judgment, it would be highly desirable to require that all prospective candidates for admission to graduate study in economics present scores on tests designed to yield measures of scholastic aptitude and proficiency in economics. The Aptitude Test and the Advanced Economics Test of the Graduate Record Examinations provide such measures and would be available to all candidates. Continuing studies of the results of these tests should be made, not only to check the validity of the tests, but also to check the validity of judgments made about students. I suspect, and this opinion has been frequently confirmed by others, that the evaluation of students in graduate school is much less discriminating than it should be. Graduate grades for example are notoriously undiscriminating. When correlations between scores on

[15] This test was devised by a committee chosen from a panel nominated by the American Economic Association. The Committee consisted of Professors Clark L. Allen, Kenneth E. Boulding, Mary Jean Bowman, Ben W. Lewis, and Joseph J. Spengler (chairman).

tests and success in graduate school are less than might be hoped, it is always possible that discrepancies may be due in part to inadequacies in faculty appraisal of graduate students, and not alone to inadequacies in the tests.

The Graduate Record Examinations program presents few administrative problems for the university and is reasonably convenient for the student. It is conducted entirely by the Educational Testing Service, a non-profit organization located at Princeton, New Jersey. Each student can take the test at or near his home. The fee is ordinarily paid by the student but can be borne by the institution on a reimbursable basis.[16]

Selection of Students after Admission

Though improvement can be made in the selection of students prior to admission, the fact remains that our ability to appraise the potential success of applicants is limited, and a very selective admission policy will almost surely result in errors in the form of denial of worthy candidates and admission of unqualified candidates. Therefore, as suggested earlier, a reasonably lenient admission policy is indicated for all but a few institutions. The major part of the selection process, then, must take place during the early graduate period after the actual performance of the student can be observed. Even in institutions with the most rigorous pre-admission selection, the weeding out of the unfit will be necessary.

Present Practices

Most graduate departments of economics have standards which the student must meet after admission if he is to remain in good standing. Among 61 reporting departments, these standards are as follows:

	Number of departments
Honors	1
B	38
B—	5
½ of work B or better	1
Not more than 6 hours of C	1
C	4
Pass a qualifying examination	3
Pass courses	8
Total	61

When a student falls below the standard, the penalty in about half the institutions is probation and in another half immediate dismissal.

[16] See Educational Testing Service, *National Program for Graduate School Selection: Prospectus for Deans and Advisers,* Princeton, 1951. A copy of this booklet should be in the files of every department chairman.

A few permit special examinations or repeating courses in fields in which the candidate has been deficient. More than two-thirds of the reporting departments indicate that they also make informal efforts, though personal advice and persuasion, to induce weak students to drop out even though they may have met the formal standards.

Student Mortality

That a substantial selection process takes place after admission to graduate study is indicated by the extent of student mortality. Precise figures on this subject are not available but I have tried to arrive at a very rough estimate by inference from a variety of data on enrollments, degrees awarded, percentage passing preliminary examinations, number of candidates preparing theses, and average residence between various points in the graduate program.

From these figures, I would guess that out of 100 students admitted to graduate standing in economics:

60 will be awarded the master's degree or will complete the first year of graduate work successfully
30 will proceed with further graduate work
20 will take preliminary examinations
17 will pass these examination
10 will receive the Ph.D.

I repeat that these are very rough estimates. They probably do not reflect the actual experience of any one institution because there are extremely wide differences.

Not all of the mortality is due to poor scholarship. Some of it is due to the fact that students achieve their study objectives before completing the Ph.D., that they secure attractive jobs, that they run out of money, that their health breaks, or that they lose interest. Apparently there is great difference among institutions in the causes of mortality. Some reported that all mortality of graduate students in economics is due to student failure to meet scholarly requirements; others said that all mortality may be ascribed to other factors; and others gave almost every possible answer between these extremes. I suspect, on the basis of these replies and my conversations on the subject, that few departments have made careful studies of student mortality or know what happens to the great bulk of graduate students who drop out at some point along the line. In particular there is little knowledge of the extent to which gifted students fall by the wayside for one reason or another.

Among the graduate professors who were queried about selection of students after admission, few thought present practice too rigorous and a substantial number thought it too lax. Their responses to a question regarding the present mortality rate were as follows:

	For first-year students[17]	For advanced students[18]
Too high	10%	3%
About right	56	49
Too low	33	43
No answer	1	5
Total	100	100

Many of those who thought mortality too low felt that there was laxity in the weeding out of poor students. From the answers to the question, however, one does not gain the impression of widespread or deep dissatisfaction with the process of student selection. There was greater concern, however, when the positive question was asked regarding present practice in the encouragement of the more capable students. Several mentioned the need of more financial assistance, of honors and awards, and of better counselling.

Selection Policy

There are several techniques which can be employed to implement a policy of rigorous selection after admission.

First, students whose undergraduate grades and test scores indicate some probability that they will be unable to earn a master's degree should be warned in advance. This warning can best be given systematically, in accordance with established rules, through some form of probationary status. Some universities, for example, place on "limited status" all graduate students whose undergraduate grades were not up to a specified standard. A student on limited status is then dropped if, at the end of his first term, he fails to make grades of a stated minimum.

Second, a formal qualifying examination can be given to all new graduate students at some specified time after admission. In the few universities now giving the qualifying, practice varies as to the interval after admission when it is given: in some, it is shortly after admission; in others, near the end of the first academic year. Wherever I encountered the qualifying examination, faculty members commended it highly as a device for screening students and discovering deficiencies and as a basis for counselling. The examinations are mainly of an "essay" type not far different in character (but at a lower level) from the traditional comprehensive written examinations for doctoral candidates.

Third, students not on probation who fail to make specified grades should be placed on probation, and those on probation who fail to

[17] Schedule IV: 61 respondents.

[18] Schedule VII: 59 respondents.

make the standard should be dropped. In order to use this device, it is necessary that students be required to take courses for credit and to write examinations in these courses.

Fourth, the requirements for the master's degree can be made a major device for screening students. If, as strongly advocated here, the status of the degree were raised and a thesis and comprehensive written and oral examination required, the procedures surrounding the granting of the master's degree would provide an excellent device for screening candidates. The examining committee could pass on two questions: whether the individual should be awarded the master's degree, and whether he should be permitted or encouraged to proceed further with graduate work.[19] After the master's degree, little selection of students should be required—beyond that which takes place in connection with the preliminary examination for the doctorate and the dissertation.[20]

A Note on Financial Assistance to Students

An important part of the recruitment and selection of graduate students is the use of scholarships, assistantships, and other forms of financial aid. The high degree to which graduate students of arts and sciences are subsidized in American universities is a phenomenon of great interest. It is curious that graduate students in these fields are singled out for aid which, on the whole, is denied students of law, medicine, dentistry, and other fields requiring long, arduous, and expensive training. What is it, for example, that makes a student of chemistry commonly eligible for financial assistance and a student of medicine not so eligible?[21] A careful investigation of this institutional quirk, which probably enables the graduate colleges of arts and sciences to draw outstanding talent far beyond what they could otherwise

[19] A less desirable alternative to the examination of master's candidates by a committee is the circularization of all staff members regarding each candidate requesting opinions as to whether he should be encouraged or permitted to go on.

[20] A special problem regarding the selection of candidates occurs when students transfer from one university to another after having completed some graduate work. Because of the difficulty of interpreting graduate grades and letters of recommendation, it is probably desirable to supplement these sources of information with undergraduate grades and test scores. Many students transfer after completion of the master's degree. This is frequently a desirable practice and should be encouraged. If the status of the master's degree were raised, and the requirements made fairly uniform throughout the country, the fact that a student had earned a master's degree would also provide considerable information about him. At present, however, in view of the low estate to which the master's degree has fallen, a student's possession of that degree signifies little. After admission, transfer students can be subjected to the various screening procedures such as probationary status, requirement of minimal grades, and qualifying examinations.

[21] For an interesting discussion of the finance of students see, Ernest Van den Haag, 'Higher Educationa on the Cuff," *Fortune*, 1952.

TABLE 21.—FINANCIAL ASSISTANCE TO FIRST-YEAR GRADUATE STUDENTS OF ECONOMICS, 1951–52[a]

Kind and amount of work involved	Number receiving tuition only	Number receiving payment in cash or kind (over and above tuition) of:						Total
		0–$250	$250–499	$500–749	$750–999	$1,000–1,499	$1,500–and over	
No service to university	30	6	7	7	4	3	—	57
Teaching, total	1	—	2	5	8	16	1	33
Quarter-time or less	—	—	2	5	7	—	—	14
Half-time[b]	2	—	—	—	1	16	1	19
Research, total	4	—	8	3	10	11	3	39
Quarter time or less[c]	2	—	6	2	6	5	—	21
Half-time	—	—	—	1	1	6	—	8
Three-quarter time[d]	2	—	2	—	3	6	—	7
Full-time	—	—	—	—	—	—	3	3
Clerical duties, total	4	20	13	2	5	7	—	51
Quarter-time or less	1	20	9	—	4	—	—	34
One-third time	—	—	2	2	1	5	—	10
Half-time	1	—	—	—	—	2	—	3
Three-quarter time	2	—	2	—	—	—	—	4
Grand Total	39	26	30	17	27	37	4	180

[a] Schedule III: data reported by 38 universities.
[b] Includes 6 assistants the nature of whose work was not specified.
[c] Includes third-time.
[d] Includes two-thirds time.

command, is a subject that exceeds the bounds of this study.

Table 21 gives data on financial assistance during 1951-52 to first-year graduate students of economics at 38 universities. Of the 180 receiving assistance, 39 (22 percent) received tuition only and about 85 (47 percent) received tuition and $500 or more. A substantial number (57 or 32 percent) performed no services to their universities; the remainder were divided among teaching, research, and clerical duties.

Table 22 presents corresponding data on financial assistance to advanced graduate students at 27 universities. At these institutions assistance was given to 373 advanced students. The great majority of these received cash over and above tuition, most were serving as teachers, and most were employed half-time or more.

The number of first-year students receiving financial assistance at 33 reporting institutions was approximately 13 percent of the total graduate student body, and the number of advanced students receiving aid at 23 reporting institutions was about 30 percent of the total graduate student body.[22]

[22] The percentage of first-year and advanced graduate students receiving financial aid varied from 0 to 100 among the several institutions for which data were available. The distribution is as follows: (*see tabulation at bottom of next page*).

TABLE 22.—FINANCIAL ASSISTANCE TO ADVANCED GRADUATE STUDENTS OF ECONOMICS, 1951–52[a]

Kind and amount of work involved	Number receiving tuition only	Number receiving payment in cash or kind (over and above tuition) of:						Total
		0–$250	$250–499	$500–749	$750–999	$1,000–1,499	$1,500–and over	
No service to university	27	5	8	6	3	16	5	70
Teaching, total	—	1	6	20	29	68	85	232
Quarter-time or less[b]	—	—	4	8	18	24	14	54
Half-time	—	1	2	12	11	38	—	101
Three-quarter time[c]	—	—	—	—	—	6	35	41
Full-time	—	—	—	—	—	—	36	36
Research, total	—	—	2	1	—	13	5	21
Quarter-time or less	—	—	1	—	—	—	—	1
Half-time	—	—	1	1	—	9	1	12
Three-quarter time[c]	—	—	—	—	—	4	1	5
Full-time	—	—	—	—	—	—	3	3
Clerical duties, total	1	5	7	3	6	20	8	50
Quarter-time or less[b]	—	5	7	3	5	1	—	21
Half-time	1	—	—	—	1	19	6	27
Three-quarter time[c]	—	—	—	—	—	—	1	1
Full-time	—	—	—	—	—	—	1	1
Grand total	28	11	23	30	38	117	103	350[d]

[a] Schedule VI: data reported by 27 universities.
[b] Includes third-time.
[c] Includes two-thirds time.
[d] In addition, financial assistance was given to 23 students for whom data on amount and duties are not available.

The extent of financial aid is measured not alone by the percentage of resident graduate students who get aid in any one year, but also by the percentage of students who receive aid *at some time* in their graduate careers. The latter percentage is considerably higher because

Continuation of footnote 22.

Percent of students receiving financial aid	Number of institutions	
	First-year students	Advanced students
0	5	3
1–19	10	4
20–39	9	9
40–59	3	5
60–99	3	1
100	3	1
Total	33	23

only a minority of students receive aid during the entire period of their graduate study.

Table 23 shows data on the extent of financial assistance as reported by present and former graduate students. These figures show that 58 percent of present graduate students and 79 percent of former graduate students received aid at some time in their graduate careers. A little more than a fourth of both groups indicated that they had received aid during the entire period of their graduate study to date. One-sixth and one-fifth of the two groups respectively reported that their aid had involved no work. The percentage of students receiving financial

TABLE 23.—FINANCIAL ASSISTANCE TO GRADUATE STUDENTS OF ECONOMICS AS REPORTED BY PRESENT AND FORMER GRADUATE STUDENTS[a]

	1951–52 graduate students			Former graduate students		
	First-year[b]	Advanced[c]	Total	Master's[d]	Ph.D.[e]	Total
Received financial aid at some time during graduate career:						
Yes	37%	73%	58%	50%	87%	79%
No	22	16	19	44	12	19
No answer	41	11	23	6	1	2
Total	100	100	100	100	100	100
Received financial aid during:						
Entire graduate residence	34%	24%	29%	28%	26%	27%
Half or more	3	37	22	17	43	38
Less than half	—	12	7	5	18	14
No aid or no answer	63	27	42	50	13	21
Total	100	100	100	100	100	100
Kind of work performed for financial aid:						
None	22%	11%	16%	9%	23%	20%
Teaching	3	36	23	18	33	31
Research	5	5	5	5	8	7
Clerical	3	5	4	5	7	6
Teaching and clerical	2	6	4	4	8	7
Teaching and research	—	10	6	6	8	7
Other	2	—	—	3	—	1
No answer	63	27	42	50	13	21
Total	100	100	100	100	100	100

[a] Schedules IX and X.
[b] 59 respondents.
[c] 81 respondents.
[d] 54 respondents.
[e] 164 respondents.

assistance was uniformly greater among advanced students or Ph.D.'s than among first-year students or masters.

Most universities require that graduate students who are employed as assistants carry a reduced load of graduate study. Practice as to the amount of reduction varies considerably (see table 24). The variation is particularly marked for students working full-time.

The view is sometimes expressed that the employment of graduate assistants is a form of exploitation or sweat-shop labor. At the other extreme, the view is often stated that the work of a graduate student constitutes a form of apprenticeship or an induction into the profession which is the most valuable part of his graduate experience. In general, opinion in the profession is much closer to the second of these views than to the first. However, one's judgment on the educational and other values in graduate assistantships will depend on the type and amount of work and on the amount of remuneration.

On the question of whether universities should provide financial aid, graduate professors of economics are strongly and almost unanimously

TABLE 24.—GRADUATE LOAD PERMITTED STUDENTS WHO ARE EMPLOYED AS ASSISTANTS[a]

Permitted graduate load as fraction of full load	Number of reporting institutions			
	Quarter-time work	Half-time work	Three-quarter time work	Full-time work
Full	10	2	—	—
$\frac{3}{4}$ or more	20	3	—	1
$\frac{2}{3}$ or $\frac{3}{5}$	—	10	3	—
$\frac{1}{2}$	—	10	10	2
$\frac{2}{5}$ or $\frac{1}{3}$	—	—	1	6
$\frac{1}{4}$ or $\frac{1}{5}$	—	—	5	10
No information	29	34	40	40

[a] Schedule III: 59 respondents.

favorable. When asked about the objectives of this aid, the replies were as follows:

To encourage students to enter graduate study in economics who otherwise would not go on to advanced work	74%
To ease the financial strain of graduate students so that they may devote themselves more fully to their studies	77%
To insure an adequate flow of first-year graduate students to the department	40%
To obtain the services of graduate students for teaching, research, and other departmental duties	34%
To give graduate students an apprenticeship in professional work	45%

Most respondents thought that several of these objectives could be achieved concurrently, and therefore that the provision of assistant-

ships and scholarships for graduate students is a highly desirable practice.

When asked whether there are elements of exploitation in the provision of assistantships, the large majority of the professors thought not, and many of these felt that there are valuable educational values to be gained. Most of the few who thought there is exploitation in the assistantship system felt that the experience is good but that graduate students are underpaid for it. A considerable number, however, raised questions about *teaching* assistantships—not from the point of view of the assistant teachers but from the standpoint of their undergraduate students. In personal conversations on this subject I found a considerable number of professors who feel that the assistantship system involves an excessive sacrifice of undergraduate education for the sake of attracting graduate students or of cutting instructional costs. Most of the suggestions for improvement of the assistantship system centered around higher pay, requiring less work (particularly less routine or menial work), more careful selection of assistants, and more careful supervision of assistants.[23] It was clear from these replies, however, that most professors regarded the assistantship system as desirable.

When present and former graduate students who had had assistantships were asked their opinion concerning the value to them of the work required, the responses were highly favorable, as follows:[24]

Contributed materially	61%
Contributed some	13
Neutral	7
Diverted too much time, but contributed	10
Diverted too much time, but not serious	2
Diverted too much time, a serious problem	7
Total	100

It is apparent that the system of financial aid now in operation has strong support from both faculty and students. My principal recommendation is that financial aid be administered, so far as possible, with the purpose of discovering, encouraging and developing superior talent. This would suggest substantial allotments to first-year students. My impression is that financial aid is often used to encourage maximum total enrollments of graduate students rather than to encourage the best students to enter graduate work and to pursue their studies to completion.

[23] See Chapter 10.

[24] Schedules IX and X: 358 respondents.

Chapter 7

SUBSTANTIVE CONTENT OF GRADUATE STUDY

In this and the following three chapters the content of graduate education in economics will be considered. This chapter is concerned with subject matter in economics and related areas; the following three chapters will deal respectively with the "tool" subjects, training for research, and training for college teaching.

The kind of subject matter in economics and related areas that finds its way into graduate curricula is a resultant of several factors. It is determined partly by the traditions of economic education, which surely exert a profound influence, and it is determined by current trends in the development of the field, by the nature of the problems which are presently demanding the attention of economists, and by the special intellectual interests of particular faculty members. The curriculum—both in the list of courses offered and in the content of courses—is constantly adapting to new developments in the field and to new conditions in the world. Yet a kind of stability and continuity is achieved as a product of well-established tradition.

Proliferation of Economics

Economics, like other branches of learning, has undergone remarkable change in the past generation. New areas have been opened up, old ones have been refined and elaborated, new tools of analysis have been introduced, and new sources of data have been provided. Much of this change has taken place as economics has faced up to contemporary problems created by world conflict, new technology, economic instability, and growth of power blocs.

A mere recital of some of the areas of economics in which important developments have occurred is impressive. Among them are: monopolistic competition; theory of the firm and administrative behavior; theory of national income and employment; fiscal policy; dynamic economics; theory of growth and development; national income accounting; national economic planning; econometrics and mathematical economics; input-output analysis; and application of public opinion and behavioral research to economic problems. To this list could be added the great proliferation of such fields as statistics, labor economics, international economics, agricultural economics, area studies, welfare economics, industrial organization, and demography.

These developments in economics have left their imprint on graduate curricula. The content of old courses has been changed, new ones have been added, and a few have been dropped. Even the rapid increase

in number and variety of courses at most universities may be attributed partly to changes in the intellectual content of the field. A check of the catalogs of 10 leading universities indicated that these institutions together listed 389 courses in economics available to graduate students in 1929 and 628 such courses in 1952, an increase of 61 percent.[1] The corresponding figures for strictly graduate courses (i.e., excluding courses open both to graduate and undergraduate students) were: 136 courses in 1929 and 332 in 1952, an increase of 144 percent.

Another effect of new developments in economics has been the introduction of new fields of specialization. Today it is not uncommon for doctoral students to offer, for their examinations, such fields as employment theory, national income accounting, or economic development—fields which were seldom regarded as specialties a generation ago.

But perhaps more important than these changes has been the introduction into economics of enormously greater refinement of detail and more elaborate technical apparatus. A generation ago, graduate students in most universities concentrated on mastering Marshall's *Principles* which was a kind of bible for economists; they studied a fairly non-mathematical and non-theoretical type of statistics; they read a discursive type of economic history and history of economic thought; and they specialized in several other fields, such as public utilities, money and banking, foreign trade, or labor, no one of which required highly specialized or difficult technique. Today, on the other hand, graduate students of economics are confronted with a vast array of concepts, techniques, and detailed theoretical constructions. They perforce live in a strange world of indifference maps, kinked demand curves, cross elasticity, marginal propensity to consume, liquidity preference, net national product, sampling error, linear programming, and input-output matrices. They spend much of their time gaining familiarity with specialized concepts and techniques, and their success as graduate students is gauged largely by the degree to which they master them.

The graduate student of a generation ago, having less technical detail to cope with, was perhaps able to devote more of his time to rounding out his general education, learning something about the related social disciplines, exploring philosophy, and acquiring historical and institutional knowledge. It is possible that his graduate studies were less hectic than those of his more recent successors and that he had more time to digest, to correlate, and to philosophize.

This may well be an exaggerated picture of the differences between

[1] The institutions included were Harvard, Illinois, Iowa, Michigan, New York, Ohio State, Princeton, Stanford, Wisconsin, and Yale. An effort was made to achieve full comparability of these figures for the two selected years. In some cases, this was difficult because of changes in administrative organization and in nomenclature. However, I believe the figures presented are reasonably accurate.

graduate study of a generation ago and today. As one of my critics has said, there was always too much to learn in economics, and some of the increasing emphasis on formal technique may be offset by decreasing emphasis in other areas, notably history of economic thought and institutional study. Yet I feel that the comparison is essentially correct; my impression is shared by many of the economists with whom I talked. Economics is not, however, unique in this respect. The proliferation of subject matter and increasing technicality which I have described apparently characterizes physics, chemistry, biology, psychology, and many other fields in which rapid scientific progress is occurring and in which there are many practical applications of new developments. A kind of Malthusian principle seems to be at work in which knowledge grows at a geometric ratio while the time that can be spent by students in learning it grows at no more than an arithmetic ratio. Some have suggested that the problem is unusually acute in economics—a field in which the empirical testing of theory is difficult. Since old theories are never disproved decisively the discipline experiences accretion without elimination.

The proliferation of subject-matter and the increasing technicality of economics is probably the underlying basis of most criticisms of the content of graduate education in economics today. Perhaps the most frequent of these criticisms is that we are trying to cram too much into our graduate students—more than they can be expected to assimilate in the few graduate years. The result, it is said, is superficial knowledge of many things but sound and thorough mastery of none.

A second and related criticism is that students are so completely immersed in learning the technicalities of the field, and are under such great pressure to do so, that they do no longer have time to grasp the full significance of what they are learning nor the opportunity to gather in a background of broad historical, philosophical, and institutional insights which would give them the perspective and judgment necessary for successful work as economists. Since many of the technicalities of the field are in economic theory, this criticism sometimes takes the form of an attack on what is termed the over-emphasis on theory at the expense of the so-called applied fields. The theoretical bias is said to extend even to the courses which were once approached largely by historical and institutional methods, e.g., public finance, international economics, and money and banking. The result, it is said, is a narrow-minded generation of economists who are almost oblivious of anything that happened before 1929, who have little sense of politics or of history, who lack judgment, who are unable to distinguish between the postulates of theory and the facts of the real world. Thus, it is concluded, the stress on technique, and the closely-related emphasis on

theory, has been carried too far. It is time to retrace our path toward a more equal balance between the technical-theoretical and the historical-philosophical-institutional approaches.[2] This second criticism was expressed to me by many persons—professors, graduate students, and employers of economists. It was implicit in Professor John H. Williams' presidential address before the American Economic Association in 1951.[3] That this opinion should be widespread was a distinct surprise to me because I had been expecting to hear more frequently the opposite contention, namely, that our training in the technicalities and in economic theory is not sufficiently rigorous.

A third criticism of current graduate education pertains to over-specialization. It is said that the inability of economists—either during their graduate years or later on—to master the entire intricate and ramified field leads to excessive and premature specialization. It is recognized that this specialization may be unavoidable, since no man may be expected to master the whole field, yet there is a vague sense of uneasiness based on the feeling that students do not achieve the desired breadth of view. No doubt this attitude derives from the sense of interrelatedness of economic phenomena which most older economists regard as the very essence of the discipline. They feel that the economy, to be understood, must be viewed as a system in its entirety, and that excessive specialization destroys or blurs its systemic nature. Such critics, therefore, tend to deplore the present state of the discipline and to hope for the second coming of a John Stuart Mill or an Alfred Marshall to fit the pieces together into one intellectually satisfying—and at the same time reasonably non-mathematical—system. Some are optimistic and look for the new messiah to do his work in the next few years. Others, more pessimistic, feel that the science has advanced in so many directions and on so many fronts that a new synthesis is no longer feasible. According to this latter view, the economic generalist will soon become as scarce and as anachronistic as a Physiocrat or a Manchester Liberal.

The proliferation and "technicalization" of economics raises significant issues concerning the content of the graduate program. Should there be a common core and what should be its nature? What should be the role of economic theory? of statistics? of economic history? How much breadth should be expected? To what extent is specialization permissible? These are the questions to be considered in the remainder of this chapter.

[2] A variant of the criticism that theory is over-emphasized is that theory is associated with left-wing ideological biases.

[3] "An Economist's Confessions," *American Economic Review*, Mar. 1952, pp. 1-23.

A Common Core

In Chapter 4, I suggested that a "common core" of essential content be required of all graduate students in economics who are candidates for the Ph.D. and a similar but less rigorous core be required of candidates for the master's degree. A great majority of graduate professors are favorable to such a common core. Their responses on the question of whether "certain courses should be taken or certain subject matter learned by all or most candidates" were as follows:

	For master's candidates[4]	For doctoral candidates[5]
Yes	72%	73%
Possibly	16	9
No	7	10
Uncertain	3	2
No answer	2	6
Total	100	100

Almost all of those favorable to the common core thought it should be formally required of all students. But on the question of the content of the core, there was near-agreement on only one subject, namely, economic theory. Table 25 presents a tabulation of replies to the question of what courses or fields *ought* to be in the core and also indicates the percentage of institutions in which each field is formally required or elected by the great majority of students. As shown in the table, economic theory is recommended by 90% or more of the respondent professors, is formally required in nearly two-thirds of the reporting institutions, and usually elected by students in most of the remaining institutions. A little more than half the responding professors are agreed on statistics and economic history for doctoral candidates; otherwise no field draws a majority vote for inclusion in the core. Apparently, many professors are dissatisfied with what they consider the inadequate emphasis being given to statistics and economic history because the percentage recommending these subjects for inclusion in the core is substantially higher than the percentage of institutions in which these subjects are required or usually elected. On the other hand, some of the professors apparently feel that history of economic thought is being overdone because the percentage voting for it is smaller than the percentage of institutions in which it is required or usually elected.

Additional opinion of graduate professors on the relative importance of various fields was obtained through questions regarding over- or under-emphasis (Table 26). A substantial percentage thought that

[4] Schedule IV: 61 respondents.

[5] Schedule VII: 59 respondents.

TABLE 25.—PROPOSED AND ACTUAL CONTENT OF THE "COMMON CORE"

Course or field	Percent of respondent professors recommending each course or field		Percent of reporting institutions in which course or field is formally required or usually elected					
	For master's candidates[a]	For doctoral candidates[b]	For master's candidates[c]			For doctoral candidates[d]		
			Required	Usually elected	Total	Required	Usually elected	Total
Economic theory	90%	98%	63%	35%	98%	65%	30%	95%
Statistics	44	53	16	5	21	22	5	27
Economic history	26	55	6	6	12	14	19	33
History of economic thought	28	37	25	12	37	49	27	76
Monetary and banking theory	24	28	4	12	16	5	32	37
Employment theory and fiscal policy	18	20	—	9	9	3	16	19
Labor economics	6	5	1	19	20	—	30	30
Public finance	10	2	3	7	10	—	19	19
Business cycles	—	7	3	7	10	—	8	8
International economics	—	2	—	10	10	—	22	22
Research methods	8	—	3	—	3	3	5	8
Mathematical economics or econometrics	2	10	1	—	1	—	—	—

[a] Schedule IV: 61 respondents.
[b] Schedule VII: 59 respondents.
[c] Schedule III: 59 respondents.
[d] Schedule V: 27 respondents.

economic theory, statistics, and economic history are being under-emphasized in the study programs of their graduate students; and some also thought that monetary and banking theory, mathematical economics, and courses outside economics were being under-emphasized for their doctoral students. A significant percentage thought that economic theory, labor economics, and courses in applied economics were being over-emphasized.

Questions regarding the relative value of various courses and fields were also directed to present and former graduate students. The replies are summarized in table 27. It is evident that relatively high valuations are placed by present and former graduate students on economic theory and statistics. Economic history and history of economic thought are valued well below these two. Of some interest is the substantial percentage of former graduate students who regretted that they had not had courses in research methods or courses in philosophy or social sciences outside economics.

My inquiries regarding the "common core" lead to two conclusions: (1) almost everyone agrees there should be a required common core, but (2) economic theory is the only subject which all agree should be included. Regarding the inclusion of other subjects there are substantial differences of opinion—although there is strong support for

TABLE 26.—OPINIONS OF GRADUATE PROFESSORS REGARDING RELATIVE EMPHASIS ON VARIOUS COURSES OR FIELDS

	Percentage of respondent professors expressing opinion that course or field is:			
	Under-emphasized		Over-emphasized	
	For master's candidates[a]	For doctoral candidates[b]	For master's candidates[a]	For doctoral candidates[b]
Economic theory	16%	12%	8%	9%
Statistics	13	15	—	—
Economic history	10	22	—	—
History of economic thought	3	7	—	5
Monetary and banking theory	—	9	3	—
Employment theory and fiscal policy	2	—	3	3
Labor economics	—	—	5	9
Public finance	2	3	—	2
Business cycles	—	2	—	—
International economics	2	5	—	—
Research methods	—	—	—	—
Mathematical economics or econometrics	2	9	—	2
Courses in applied economics	2	5	13	10
Courses in philosophy or social sciences outside economics	8	14	2	—

[a] Schedule IV: 61 respondents.
[b] Schedule VII: 59 respondents.

statistics, economic history, history of economic thought, and monetary and banking theory. I suspect, on limited evidence, that there is considerable difference of opinion also on the *kind* of economic theory that should be included.

Despite this lack of unanimity, I feel strongly that there should be a well-established common core and that the profession should work toward general agreement on its content.

In developing the content of the core, it is essential to include only genuine fundamentals which *all* students should be expected to master, and to strip the core of non-essentials. The several courses should be worked out in sequential and integrated fashion with clear agreement among professors as to coverage, omissions, and relationships—thus insuring adequate coverage while avoiding duplication. Only in this way can the core serve its purpose without taking over an undue proportion of the curriculum. Incidentally, there are great differences among graduate departments in the degree of teamwork and cooperation among professors in the planning of their courses and examinations. In some, each staff member seems to be a law unto himself. He teaches

and holds students responsible for whatever he chooses without joint consultation or planning. In others, great care is apparently exercised in working out balanced, non-duplicating, and inclusive programs of studies. Needless to say, I strongly recommend the latter policy for the core courses. The traditional freedom of professors should be tempered by cooperation in the planning of the core. If there is to be unbridled freedom, it should be reserved for specialized courses lying outside the central nucleus.

The requirements in economics and related fields, as recommended in Chapter 4, and in the remainder of this chapter are summarized in table 28. These include the common core and other requirements. These requirements could be applied either by means of required courses or by means of comprehensive examinations. I recommend the latter method. The achievement of required proficiency in a field of knowledge should be distinguished from the passing of given courses. More-

TABLE 27. OPINIONS OF PRESENT AND FORMER GRADUATE STUDENTS REGARDING VALUE OF VARIOUS COURSES AND FIELDS

	Graduate students in residence in 1951–52[a]			Former graduate students[b]		
	Of little value	Of great value	Did not take; should have been required	Of little value	Of great value	Did not take; should have been required
Economic theory	6%	38%	1%	7%	39%	6%
Statistics	4	25	9	3	26	17
Economic history	4	11	1	3	6	3
History of economic thought	2	12	7	1	12	2
Monetary and banking theory	3	11	—	1	7	—
Employment theory and fiscal policy	—	1	—	—	—	—
Labor economics	—	9	—	1	11	1
Public finance	—	5	1	—	4	1
Business cycles	—	3	—	—	5	—
International economics	—	6	—	—	2	—
Research methods	1	1	2	—	3	11
Mathematical economics or econometrics	1	6	2	1	4	4
Business administration	3	6	3	2	6	4
Industrial research	4	7	1	—	9	1
Business finance	—	2	—	—	4	1
Courses in philosophy or social sciences outside economics	—	3	4	—	8	8

[a] Schedule IX: 140 respondents.
[b] Schedule X: 218 respondents who received advanced degrees in 1939–40 or 1949–50.

over, students should be free to prepare for examinations not only by taking courses but also by independent study. In any event they should expect to do independent study beyond the requirements of courses. Nevertheless, I have indicated the requirements in terms of courses or equivalents in order to express the nature of the suggested requirement with some concreteness.

Apparently there is general agreement among graduate professors that requirements should be in terms of performance on examinations rather than passing of courses, yet many professors have told me that this distinction is not easy to apply in practice. Even with the best of intentions, there is a tendency for students to prepare for examinations almost exclusively by taking courses and an equally pronounced tend-

TABLE 28.—SUGGESTED SUBSTANTIVE REQUIREMENTS FOR GRADUATE STUDENTS IN ECONOMICS[a]

	For Ph.D. candidates	For master's candidates
Common core:		
Economic theory including value, distribution, money, employment, and other topics	Equivalent of two year courses with prerequisite of intermediate theory and undergraduate money and banking	Equivalent of one year course with prerequisite of intermediate theory and undergraduate money and banking
Economic history	Equivalent of one year course	None
History of economic thought	Equivalent of one half-year course	None
Statistics	Equivalent of one year course with prerequisite of undergraduate statistics	Equivalent of one half-year course with prerequisite of undergraduate statistics
Research methods	Equivalent of one half-year course or coverage in connection with other courses	None
Other substantive requirements:		
Selected special fields of economics	Two to four fields each represented by the equivalent of at least one year course for which undergraduate course is a prerequisite. Fields in the common core may be selected if advanced work is done over and above the core requirement	One field represented by the equivalent of one year course, or two fields each represented by the equivalent of one semester course
Other fields of economics	Knowledge of many fields equal to that which could be acquired by reading elementary survey textbooks	Knowledge of 3 additional fields equal to that which could be acquired from reading elementary survey textbooks
Fields outside economics	Background such as would be expected of a highly-educated man	Background such as would be expected of one who had completed undergraduate work in a good liberal arts college

[a] See pp. 42–4, 60–1.

ency for comprehensive examinations to be based largely on the content of courses.

Economic Theory

Perhaps the most difficult problem in selecting a suitable common core is to decide on the nature of the courses in economic theory. The difficulties arise chiefly from the fact that the field has been rapidly changing and growing. Most teachers are uncertain as to what should be included and what omitted, and are unsure as to the amount of technical detail that is desirable or necessary. In many departments there is dissatisfaction with present offerings in theory, and most professors are continuously revising and experimenting with their courses.

Unfortunately, I do not have any definite or detailed recipe for the content of the core offering in theory. I doubt if these offerings should or can be identical in all institutions. However, on the basis of many conversations and observations, I can make some fairly concrete suggestions.

First, the core in theory should be the equivalent of a one-year course for master's students and a two-year course for doctoral students. I am assuming that theory would include the following topics: production, value, distribution, general equilibrium, money, income, employment, and possibly others.[6]

Second, the core courses in theory should present a fairly conventional but up-to-date and integrated treatment of the subject. They should acquaint the student with some of the important modern literature and with current intellectual issues in the field, but should not pursue minor details, digressions, or fine-spun analysis very far. The adjective "conventional" was used to suggest that these courses should not be the occasion for professors to ride their hobbies or to display their virtuosity. Individualistic approaches or emphasis of specialties, which are entirely appropriate in their place, should be reserved for other courses. In the core courses in economic theory, the student should be permitted a broad but rigorous view of the field as it is generally understood and accepted in the profession at the time. This suggestion is relevant especially to those departments which are dominated by particular schools of thought or points of view. As one ardent institutionalist said to me: "We should teach conventional theory to our students, if for no other reason, so that they will be able to combat the stuff competently."

[6] Some of my critics feel that two years of theory for the aspirant Ph.D. is excessive as a minimal requirement. While I do not wish to be dogmatic on this I feel strongly that if theory is defined to include as many topics as I have indicated, it cannot be treated adequately for the purposes of doctoral students in less than two years. Many experienced professors support me in this view.

Third, the core courses in economic theory should not be expected to serve too many purposes, or too many classes of students. Otherwise there is danger that they will serve none adequately. In some institutions a single course in theory—usually a year course—is available to students offering economics as a minor, is a required course for graduate students in business administration, is the core course for graduate majors in economics, and is the most advanced work offered for those specializing in theory. I submit that no single course can serve all these purposes. If the attempt is made, economics majors are almost certain to be short-changed.

This problem is particularly acute with reference to graduate students in business administration. In some institutions, these students are formally handled as majors in economics and are required to stand an examination in theory. Being practical-minded persons, they resent this requirement; in particular, they and their professors are resentful when failure in theory blocks their progress toward an advanced degree. Then, in order to avoid internecine trouble or to avoid losing the business administration students, efforts are made to soften the basic theory courses to the detriment of the *bona fide* economics majors. In other institutions in which separate degrees are granted to majors in business administration, the same problem arises when economic theory is required of business administration students. If the theory courses are sufficiently rigorous to be appropriate for economics majors, objections will be heard from business administration; if the courses are modified to meet these objections, they will no longer be suitable for economics majors. My firm conviction is that there is only one proper solution to this problem. Sound courses for graduate economics majors, resting on a prerequisite of undergraduate economic theory and providing a rigorous exercise in the fundamentals of the subject, should be offered. All economics majors should be required to take these courses or their equivalent—master's candidates for one year and doctoral candidates for two years. They should be open to other students who are prepared for them, but without any concessions. If these courses do not meet the needs of minors, business administration students, and others, one or more special courses for these groups might well be organized, but no economics majors should be permitted to substitute the standards of these special courses for those of the core courses in theory intended for majors. The argument for separating the several classes of students in theory is strengthened since the theory needs of the students of business administration are probably rather different from those of economics majors. This raises the interesting question as to what kind of theory is appropriate for business students, but that is beyond the scope of this study.

Fourth, advanced courses in theory should be provided, beyond the core courses, for those who wish to offer theory as one of their special fields. In many institutions there is no provision for this need.

Fifth, the nature of the required work in economic theory should be such that its relevance would be evident to students regardless of their intended special fields or career objectives. In some institutions I noted the tendency of students to regard economic theory as a hurdle—something like the foreign language requirement—which must be surmounted but which is not considered relevant to one's major interest in corporation finance, labor economics, transportation, agricultural economics, or other applied fields. This condition is clearly deplorable. It is due partly to the manner in which theory is presented, and due partly to the manner in which other fields are treated. Many courses in theory are highly abstract and other-worldly, and many teachers of theory apparently make little effort to show how it is used in the solution of practical and intellectual problems. I believe that the best teachers of theory demonstrate its pertinence and usefulness. They draw upon historical and statistical illustrations. They show by example how theory is used in the solution of practical problems. They demonstrate its relation to empirical methods in the advancement of knowledge. For them, theory is not an intellectual exercise antiseptically removed from all contact with real problems and issues. Teachers in other fields also need to help in linking theory to other branches of economics. The various so-called applied fields differ in the extent to which they have traditionally drawn upon theory. Fields such as public utilities, transportation, corporation finance, economic history and labor have not ordinarily been closely linked with economic theory, whereas, fields such as international economics, money and banking, business cycles, and public finance have maintained very close ties with theory. It seems to me essential that students should be called upon to use theory, to varying extents, in all of their economic studies and should have repeatedly impressed upon them the indispensability of theory in all branches of economics. I particularly feel that the ties with theory should be much closer than they have customarily been in the core areas of economic history and statistics.

Economic History

The place of economic history as an intellectual discipline and as a part of graduate instruction is today both fluctuating and controversial. As indicated in table 25 a quarter of the respondent graduate professors thought it should be included as part of the core for master's candidates, and more than half thought it should be required of all doctoral candidates. In practice, economic history is required or usually

elected by master's students in only 12 percent and by doctoral candidates in 33 percent of the reporting institutions. This suggests that many professors feel that this field should be given a more prominent place in the graduate program than it has held in recent years; and in conversations I detected a widespread desire to devote more attention to economic history. I believe that economic history should be part of the core for Ph.D. candidates. It is doubtful, however, if there is sufficient time in the master's program for it to be a requirement.

The recent growth of interest in economic history is apparently a reaction to the trend of economics over the past twenty years when enormous emphasis was given to economic theory (including the theory of income and employment) and when the applied fields were preoccupied largely with pressing policy issues. The result, many think, has been the production of a generation of narrow economists who know little about events before 1929 and who lack the kind of perspective which can come only through the study of developments over long periods of time. In particular, it is held, recently-trained economists are unaware that current public problems and issues have been faced before; they fail to see the modern economy in relation to the broad historical developments of which it is only a temporary phase; they fail to recognize the difficulties of shaping our economic destinies or of predicting future events; they are unable to visualize the long periods of time required and the resistances encountered in bringing about economic change; they fail to comprehend the importance of non-economic variables in the course of economic development; they lack appreciation of the complexities of reality; and they do not understand the importance of changing institutional patterns in the determination of economic affairs. According to this view our present generation of graduate students, because of their preoccupation with theory based on limited postulates and their exclusive attention to problems covering a limited time span, are lacking in wisdom and judgment.

Many of those favoring the requirement of economic history endorsed it only on the condition that it be a certain kind of economic history—and they were deeply critical of the kind which has commonly been offered. In general, the complaints against the field were these: (1) that it tends to be a mere chronicle of more or less unrelated facts without any theoretical orientation—that it asks and answers no important general questions but merely recites a string of superficial events, and (2) that it is intellectually dull and lacking in challenge for the student. Obviously these complaints were not universal nor were they levelled against every course in economic history—yet they were sufficiently frequent to represent a solid block of opinion.

In my inquiries about economic history, I found that much experi-

mentation is in progress and that the actual courses being given vary widely among institutions. They differ in relative emphasis upon European, American, and "World" economic history. This often depends on the interests of the professors involved. Some of the courses are in the form largely of factual and detailed chronicles of events and developments; others attempt to organize the subject around broad themes such as "economic development" and to derive tentative generalizations about causation or process. The current interest in the field of economic development and foreign aid has stimulated this latter type of course. Some teachers of economic history are attempting to relate it to economic theory by using episodes in economic history to illustrate principles of economic theory and *vice versa*. In this way, they are trying to use economic history as a kind of laboratory for theory. Others are combining economic history and history of economic doctrine, and attempting to show the interrelations between the two. I was much impressed by several courses of this type, though I suspect that there are few economists who are equipped to do this successfully. Other teachers are emphasizing the use of quantitative data in the form of long statistical time series and are thus attempting to combine the inductive-historical and the inductive-statistical methods. Others try to stress episodes in economic history in which parallels or contrasts with present problems or developments can be found. Others consider the job of the economic historian to be that of tracing the institutional development of the whole economic system, and their courses tend to center around the rise and development of capitalism. These various approaches to the subject are not mutually exclusive, and there are many examples of attempts to achieve various combinations. The field is extremely broad and extensive, however, and it is not feasible to attempt to do all these things in a single year course.

I am not in a position to recommend any particular approach to economic history for purposes of the required core. I am sure that valuable courses worthy of inclusion in the core for Ph.D. candidates could be developed along several different lines, and that the particular type of course to be given in any institution must be related to the background and interests of the professor who is to give it. I find myself sympathetic toward the criticisms of conventional economic history and favorably disposed toward the efforts to join economic history more closely to economic theory, economic development, history of doctrine, and statistics. I believe that out of the current ferment in the field something exciting can be developed and that it could provide a needed antidote to the provincialism and lack of perspective which has emerged from the recent general preoccupation with theory and current public issues during the past several decades. At the moment the greatest

impediment to progress in economic history is the shortage of personnel in the field, that is, personnel sufficiently conversant with modern economic theory and statistics to offer courses which will be intellectually challenging and will contribute to the education of economists.[7]

A final comment is in order regarding the question frequently asked, whether graduate students in economics should not take general social and cultural history rather than economic history as given in economics departments. Surely no one would look with disfavor upon general history as a field worthy of study by graduate students of economics, and would recommend to any student that he acquire a broad historical background if possible. Certain courses in general history would be preferred to some courses in economic history. Yet, it is probable that economic history, given by persons trained in economics and emphasizing the economic issues of the past and the development of economic institutions, is peculiarly fitted to the needs of graduate students in economics. General history must be thought of as a desirable addition to, but not as a substitute for, economic history.

Statistics

The opinion that statistics belongs in the common core is widespread though not universal. About half the respondent professors recommend that it be included and in about a fourth of the reporting institutions it is required or usually elected (see table 25). Employers of economists in business and government also frequently mentioned statistics as a need (or lack of statistical training as a weakness) of newly-trained economists with master's degrees or Ph.D.'s.

My judgment is that statistics belongs in the common core as part of the training of all economists, and that the equivalent of a full year course should be required of both master's and Ph.D. candidates. The objectives of the core requirement in statistics should, however, transcend mere training in statistical technique. It should provide a thorough background in statistics from the point of view of scientific method and logic and it should give an understanding and appreciation of inductive method as the working partner of theory. On the technical side greater emphasis than has been customary should be given to the problems of collecting data as distinct from the problem of manipulating data once collected. The course should acquaint students with available sources of economic data and with some of the important statistical studies in economics. To accomplish these objectives, at least a full year course would be required.

[7] For a discussion of the role of economic history see *The Tasks of Economic History*, Supplement VII, 1947, *The Journal of Economic History*.

In these suggestions, there is no implication that the entire core course in statistics should be given within the department of economics, though it might be. There is much to be said for a division of labor in which the statistical technique and logic are taught by professionally-trained statisticians, while the availability, meaning, and uses of statistical data in economics are taught by economists. Moreover, the latter might be taught either in connection with courses in various substantive fields or as a separate course.

History of Economic Thought

History of economic thought is a traditional core course at many institutions. It is required or usually elected by Ph.D. students at three-quarters of the reporting institutions and by master's candidates at more than a third of the reporting institutions (table 25). However, from conversations at many institutions, I have gained the impression that it has declined in popularity. This impression is partially confirmed in table 25 which shows that the percentage of professors who believe it should be in the core is considerably less than the percentage of institutions at which it is required or usually elected. That it has declined in popularity is due not to the opinion that it is not worthwhile, but to the fact that in competition with other new and more technical fields it is being partially displaced.

For two reasons, it should not be in the core for master's students: first, the inclusion of history of doctrine will prevent the master's candidate, in the limited time at his disposal, from getting acquainted with more essential fundamentals; second, considerable maturity and knowledge of economics—more than most first-year students have—is required for adequate comprehension or appreciation of the field. Therefore, it had best be left, in most cases, for advanced students.

On the other hand, I believe that it should be part of the core for doctoral students. It is one of the better vehicles for teaching economic theory, for giving perspective on current theories, and for giving insight into reciprocal relationships between ideas and events. The experimental attempts of several institutions to correlate history of economic thought and economic history is an interesting innovation which should be encouraged and observed closely.

History of economic thought is also a vehicle for introducing students to the world of scholarship which Professor Viner has described as "the pursuit of broad and exact knowledge of the history of the working of the human mind as revealed in written records."[8] Professor Viner

[8] Jacob Viner, "A Modest Proposal for Some Stress on Scholarship in Graduate Training," Address before the Graduate Convocation, Brown University, June 3, 1950, *Brown University Papers* XXIV, p. 1.

has proposed "that graduate schools make a place in their programs, a modest place, but one not confined to the Humanities departments, for scholarship, and that they require or at least plead with their students, especially those who are destined to be college teachers, to devote to that part of the graduate school program a fraction, a modest fraction, of their attention."[9] For economics this laudable suggestion can be implemented only by introducing students to the history of economic doctrine. Professor Viner's point is, of course, that the demands of technical professionalism should not be permitted to crowd out interest in scholarship. One might add that scholarship, in the sense of conversance with the history of ideas and their influence, may be one of the ingredients in the education of competent professionals in a field like economics.

Professor Viner is not alone in his concern for scholarship. In response to a question on this subject, two-thirds of the responding graduate professors indicated that they consider it a responsibility to kindle the interest of students in scholarship in the sense in which the term is used by Professor Viner.[10]

Research Methods

"Research Methods" is a course with which several institutions are experimenting and which some professors are advocating should be part of the common core. The objectives of such a course are : (1) to help students become acquainted with logic and scientific method, the nature of hypotheses, evidence, meaning, and objectivity; (2) to acquaint students with the several methods of research or of advancing knowledge in economics; (3) to acquaint them with some important examples of research in economics; (4) to stimulate their interest in research; and (5) to give them practice in research.

These are laudable objectives which every department should attempt to achieve. There is more than one way, however, of achieving them. Existing courses in theory, history, and statistics can be used if the professors in these courses are alert to the need and have reached an accord on a content including attention to research methods. Or, by common understanding, research methods can be handled in connection with one of these courses—perhaps the theory course or, preferably, the statistics course. Or research methods might be handled by tutorial work or seminars in connection with the writing of theses. At some institutions, excellent results have been obtained from courses on the philosophy of science given in the philosophy departments and attended

[9] *Ibid.*, p. 3.

[10] Schedule VII: 59 respondents.

by students from many disciplines. A final alternative is to institute a special course in research methods in economics. Various institutions may find different alternatives feasible. However, because existing courses in statistics, economic history, and theory are already bulging with essential substantive content, some institutions may well choose to establish a new course devoted entirely to research methods.

The objection is sometimes offered that courses in methods are likely to be sterile and uninspiring. There is some validity in this objection and this is a strong argument for handling instruction in method in connection with other courses. However, the course in method need not be devoid of content. The section on logic and the philosophy of science can be most challenging if handled astutely; the course can draw on many actual research investigations which can be considered both from the point of view of method and content; and if students are given research problems, either preparatory to their dissertations or otherwise, they can gain important experience.

Breadth and Specialization

In addition to the common core consisting of theory, economic history, history of economic thought, statistics, and research methods—which would be specifically required of all students—I have suggested (see table 28) that each student should present several special fields of economics. These would be selected from a fairly long list of recognized special areas, the list varying among institutions according to the staff and facilities available. Students would be permitted to present fields included in the core as special fields. To do this, they would undertake study beyond that expected of all students. For example, if a student should elect economic history as a special field, he would be examined along with other students on economic history considered as part of the core; then he would also be examined on the additional work he had done in economic history considered as one of his special fields. Each student would presumably consider one of the selected fields his major area of specialization and within it would choose the topic for his thesis or dissertation.

I have also suggested the requirement of a broad knowledge of fields of economics other than those included within the common core or the elected special fields. Doctoral candidates would be expected to have at least some knowledge of all fields of economics and of business administration, and master's candidates a general knowledge of at least three fields outside the core and the elected special fields. (Most master's candidates with undergraduate majors in economics would presumably have been able to meet this requirement in their undergraduate years.) Knowledge of these areas should be at least the equivalent of

that which could be obtained by reading standard elementary survey textbooks. The purpose of this requirement would be to insure that students would be aware of the major concepts, terminology, and issues covering a wide area. It is difficult to imagine that a Ph.D. in economics could be granted to a candidate who was unaware of the implications of such concepts as purchasing power parity, equity capital, depreciation, discount, non-competing groups, closed shop, current ratio, disposable income, bank credit, dollar shortage, agricultural parity, basing point pricing, classified property tax, last-in-first-out, etc. This kind of general knowledge constitutes literacy for the professional economist. Graduate students should also be expected to have a substantial background in fields outside economics. A master's candidate should be expected to have a background in science, humanities, and social science at least as broad as that of one who had completed undergraduate work in a good liberal arts college in the upper third of his class. A doctoral candidate should have intellectual breadth considerably beyond this standard. He should have the rich intellectual background of a highly-educated and cultured man.

I believe that a major portion of the profession generally agrees with these standards for breadth of background in economics and other fields. In response to questions regarding specialization in particular fields of economics at the expense of broader coverage and regarding specialization in economics to the exclusion of outside subjects, respondent professors indicated strong preference for breadth over narrow specialization. A large majority felt that it is a responsibility of their departments and their institutions to help graduate students become broadly educated and well-rounded human beings (table 29). Those who demurred from this position did so chiefly on the grounds that breadth should have been achieved in the undergraduate years, that the whole educational task cannot be done during the brief graduate years, and that sound training in the student's special field should not be sacrificed to the quest of "breadth."[11]

Despite the rather general approval of "breadth," I gained the distinct impression that few departments actually enforce requirements calling for breadth *within* economics; and even fewer require breadth of background *outside* economics. I believe that these requirements should be recognized more specifically and enforced by means of ex-

[11] An interesting and witty discussion of specialization and breadth is contained in a paper by Professor George J. Stigler: "Specialism: a Dissenting Opinion," *Bulletin of the American Association of University Professors*, Winter 1951-52, pp. 650-56. Professor Stigler's thesis is (p. 650) "that the worship of the cosmopolitan mind is romantic foolishness." He is inveighing, however, against those who never specialize and not against breadth of background from which to pursue one's specialty. In general I agree with his position which is not inconsistent with the recommendations made here.

TABLE 29.—ATTITUDES OF GRADUATE PROFESSORS TOWARD DEPARTMENTAL RESPONSIBILITY FOR BREADTH OF BACKGROUND

	Master's candidates[a]	Ph.D. candidates[b]
Responsibility to assist and encourage graduate students to become broadly educated in the sense of having an understanding and appreciation of history, politics, science, philosophy, literature, art, history of ideas, etc.:		
Yes	60%	61%
Qualified	2	7
No	38	24
No answer	—	8
Total	100	100
Responsibility to provide an environment that is conducive to the development of the "whole man" including social, cultural, and recreational interests as well as intellectual:		
Yes	63%	51%
Qualified	6	8
No	28	29
No answer	3	12
Total	100	100
Responsibility to help graduate students achieve some appreciation of interdisciplinary relationships among the social sciences:		
Yes	71%	85%
Qualified	2	5
No	14	5
No answer	13	5
Total	100	100

[a] Schedule IV: 61 respondents.
[b] Schedule VII: 59 respondents.

aminations. An urgent task for the profession is to define standards for appropriate general background within and beyond economics and to develop procedures for implementing these standards.

At the moment, the principal means by which attention is given to fields outside economics is through the so-called "minor." About one-third of the reporting institutions require minor fields for master's candidates, and three-quarters require them for doctoral candidates. Most institutions not requiring minors permit students to elect one or more minor fields. In more than a third of the institutions, however, special fields within economics or business administration may be counted as minors. And in fact about 60 percent of the 1951-52 graduate students and nearly half of the former graduate students responding to my questionnaires reported that their minors had been in economics

or business. Thus, the purpose of encouraging or requiring work outside economics is by no means always fulfilled.

The philosophy underlying the minor field as a part of a graduate students' program is entirely sound. There are many cases where the combined study of two fields is appropriate and fruitful. I doubt, however, if the requirement of a minor completely meets the need for breadth of background in fields outside economics. This involves the continuation and amplification of a liberal arts education covering many fields. I believe that the only satisfactory solution is to decide specifically on the degree of breadth desired and to enforce this standard by examining candidates for advanced degrees specifically on their intellectual breadth. In this way, they will have the incentive to become broadly-educated persons before they offer themselves as candidates.

Theory vs. Empiricism

In considering the content of graduate education in economics, I have tried to suggest courses and requirements which would achieve a fair balance between theoretical and empirical studies. In the core, for example, the former is represented by economic theory and the latter by statistics and economic history. And in considering special fields and general background, I have tried to achieve a balance between the theoretical and the empirical. As a result of observing departments of economics in action, however, I have concluded that this balance is an extremely subtle affair, and is not automatically achieved merely by arranging a suitable distribution of courses and fields. The problem lies deeper than that.

It is my impression—I have little documentation—that the graduate departments of economics at different universities are very uneven with respect to the relative emphasis on the theoretical and the empirical aspects of economics.[12] The atmosphere in some departments conveys

[12] In response to a question regarding relative emphasis upon economic theory and upon "studies relating to facts, institutions, and economic policy," the replies of respondent graduate professors with reference to the balance in their own institutions were as follows (data from Schedules IV and VII):

	For Master's candidates	For Ph.D. candidates
Satisfactory balance	50%	36%
Theory heavily stressed as it should be	10	17
Theory over-stressed	10	15
Facts, institutions, and economic policy over-stressed	6	10
Need for closer integration of theory and applied fields	2	3
Other	15	14
Uncertain	2	2
No answer	5	3
Total	100	100

to students the impression that theory is important and glorious, and that institutional or historical or statistical or socio-psychological studies are pedestrian and suitable only for second-rate minds. In these institutions, the staff consists mainly of theoreticians, and even the courses in the so-called applied fields tend to be highly suffused with theory. The students of such departments tend, I fear, to become relatively narrow theorists—much more narrow than their teachers. Other departments consist mainly of professors interested in the various applied fields. The spirit of such departments is on the whole anti- or a-theoretical; courses in theory are given, to be sure, but the study of theory tends to be perfunctory—a hurdle to be surmounted and left behind.

In most departments, even those in which theoretical and empirical interests are superficially well-balanced, I felt that far too little attention was given to empirical *research* of the kind that asks important basic questions (not necessarily pretentious or comprehensive questions), formulates hypotheses, and seeks answers through acquiring and analyzing data. The result, I think, is that we are failing to turn out any sizeable proportion of students who are thoroughly trained in, or *motivated toward,* empirical investigation using institutional, historical, statistical, or socio-psychological data. Most academic economists are inclined, I think, to pursue theoretical studies or to concern themselves with problems of public policy. Their theoretical interests tend toward fairly comprehensive subjects such as monetary theory, business cycles, employment theory, price theory, etc., and their policy interests are directed toward problems at the highest level such as inflation, unemployment, monopoly, or labor relations. There is relatively much less empirical work of a more modest sort calculated to test specific hypotheses. To illustrate, much more attention has been given to the development of comprehensive monetary theories or to the discussion of high-level monetary policy than to empirical investigations such as the effect of changes in the rate of interest on business investment. And more attention has been given to the broad theories of employment or discussion of economic stabilization policy than to empirical inquiries into problems such as factors influencing the form of the consumption function.

I hasten to state that I am in no sense launching an attack on theory nor am I objecting to the consideration of public policy by economists. Theory is of prime importance to the profession and to students, and I have given it a key position in the proposed substantive requirements for graduate students. Also, I believe that economists should devote themselves to the formulation and criticism of public policy. I am merely making a plea that more attention be given by academic econo-

mists and their students to the less spectacular but none the less urgent tasks of collecting and analyzing empirical data and testing specific hypotheses. Both the theory and the policy recommendations of economists would become more substantial if founded upon a larger and more reliable base of empirical verification.

How can interest in empirical research be fostered? The answer to this question is not easy, especially as the intellectual habits and traditions of a profession do not change readily. The answer lies partly, I think, in drawing to our departments of economics more intellectually vigorous economists with strong interests in empirical research. Many of these persons are now found in the Federal government or in various research institutions where they are not in contact with students. As things now stand, the balance of intellectual vigor and influence in many departments of economics is held by those whose major interests are theoretical. There is need for adding equally effective and persuasive persons whose bent is toward empirical research.

In addition to a diversified faculty, the achievement of a balance between the theoretical and the empirical requires that the two approaches be integrated in many of the graduate courses. Everyone knows that theoretical and empirical methods are complementary and equally indispensable in the advancement of knowledge. This complementarity should become evident in many parts of the curriculum. The lines separating the study of theory, statistics, history, and the so-called applied courses should be blurred. The contributions of the several methods and points of view should be merged. There is room in theory courses for reference to inductive materials. In statistics, the relations between the inductive and deductive methods should be continuously in the forefront. In economic history, both theory and statistics should have ample play. And in applied courses, like public finance, the menu should consist of judicious combinations of history, current facts, statistical analysis, and theory. The student should be spared the kind of compartmentalization in which he studies exclusively theory at 8:00 A.M., exclusively statistics at 10:00 A.M., solely economic history at 2:00 P.M., and only public finance at 4:00 P.M.

It is to be hoped that the diversification of faculty and the integration of method within individual courses may help to arrest tendencies for economists, and whole departments of economics, to become on the one hand radically theoretical and lost in an unreal world of logical deductions from over-simplified postulates, or on the other hand adrift in a chartless sea of unordered facts. It is to be hoped that they would gain the analytical powers and the sense of the interrelatedness of things which derive from the study of theory, but at the same time gain a respect for facts, a feeling for empirical research, an apprecia-

tion of the difficulties of applying theory to practical problems, and an understanding of the infinite complexities of the real world.

It was the problem of achieving greater emphasis on the empirical aspects of economics that led to my suggestion that economic history, statistics, and research methods be included along with economic theory in the common core for Ph.D. candidates. One might add, also, that to achieve the objective, the courses in economic history and statistics should be made more intellectually exciting and challenging than they have typically been in the past.

In discussing with graduate professors the problem of the relative emphasis on theoretical and empirical aspects of economics in graduate education, many agreed that a more equal balance is desirable, but questioned whether a practicable solution could easily be found. It was pointed out, quite rightly, that economic theory is the absolutely indispensable element in the education of economists. Nothing can be done without it. The problem, they pointed out, is whether anything significant can be done toward strengthening the empirical side without sacrificing theory. As one professor said, "Learning the requisite theory requires most of the student's time during his brief graduate period. We would be glad to introduce more institutional, historical, statistical, and socio-psychological materials and more research method. But to do so would cut squarely into the amount of time available for theory and prevent us from doing a good job in that most essential area. Moreover, we have fought for a long time to gain an adequate place in the curriculum, and in the interests of students, for theory, and we should hesitate to retreat just as victory is ours. The only solution would seem to be to lengthen the graduate period, but no one is enthusiastic about that. Therefore, the only solution would seem to be to make the best of a bad situation and to continue the emphasis on theory." I do not agree that this is an insoluble dilemma; I think, however, that it is a difficult problem, and that many departments should carefully consider the relationship between the theoretical and the empirical in their educational programs, and should plan their future staff and curricula with a view to redressing any imbalance that is found.

Chapter 8

RESEARCH TOOLS AND VERBAL SKILLS

In the discussion of "objectives and standards" (chapter 4), it was assumed that the important tools of research in economics include foreign languages, mathematics, law, accountancy, socio-psychological techniques, historical techniques, and possibly others.[1] It was proposed

TABLE 30.—SUGGESTED REQUIREMENTS IN RESEARCH TOOLS AND VERBAL SKILLS FOR GRADUATE STUDENTS IN ECONOMICS[a]

	For Ph.D. candidates	For master's candidates
Research tools (foreign languages, mathematics, law, accountancy, socio-psychological techniques, historical techniques, etc.)	Ability to use one tool with high proficiency; understanding of the use of other tools	None
Verbal skills:		
Reading	Ability to read economic literature in common core and selected special fields except that involving unusual technical apparatus	Ability to read any of the easier literature in the common core and special fields
Writing[b]	Ability to write, for technically-trained or lay readers, brief or extended discourses	Ability to write brief or fairly extended discourses in special field
Speaking[b]	Ability to speak or discuss clearly and coherently before a class, seminar, public audience, or committee	Ability to present an economic subject before a class or small group and to explain a point in informal discussion

[a] See pp. 44–7, 61–2.
[b] The skills of writing and speaking are to be considered jointly; deficiency in one may be offset by excellence in the other. No candidate is to receive degree who is sub-standard in both.

(see pp. 44-5) (1) that each doctoral candidate should have a sufficient knowledge of all these tools to understand how each may be employed in economic research and to apppreciate the various ways in which knowledge of economics is advanced; and (2) that each doctoral candi-

[1] Statistics, research methods, and logic and scientific method—often considered under the heading of research tools—are not included in this list. They are considered part of the common core which was discussed in the preceding chapter.

date should be expected to achieve a genuine mastery of at least one of these research tools.[2] It was also suggested (pp. 45-7) that high levels of performance should be required of doctoral candidates in reading and in writing *or* speaking. Corresponding but less rigorous standards of proficiency in the verbal skills were recommended for master's candidates (pp. 61-2). These suggested requirements are summarized in table 30. In the remainder of this chapter, I shall discuss each of these suggested requirements.

Foreign Languages

Perhaps the most widely-discussed and controversial of the research tools are foreign languages. A foreign language requirement for master's candidates in economics is in force at 42 of 87 institutions for which data are available. Of these, 39 require proficiency in one—usually French or German, and 3 require 2 languages. In a few institutions the requirement applies only to certain students or it can be satisfied if the student has completed 2 years of undergraduate work in a language. Of 52 reporting institutions, all except two impose a foreign language requirement for doctoral candidates. The two exceptions employ a general "tool" requirement which *may* be satisfied by passing a foreign language examination. The following are the specific requirements in effect and the percentage of the 52 reporting institutions employing each:

Reading knowledge of two languages (usually French and German)	75%
Facility with one language or a dictionary knowledge of two	2
Reading knowledge of two languages or reading knowledge of one and knowledge of a tool subject	19
One language and mathematics	2
General tool requirement, language may be used to fulfill	2
Total	100

In the large majority of institutions, the doctoral student must satisfy the language requirement before he takes the preliminary examination or before he is admitted to formal candidacy for the degree. In most institutions, the department of economics has no part in the administration of the examinations. This is usually done by the modern language departments under the supervision of the graduate college. Six institutions indicated, however, that the department of economics selects foreign language materials for the examinations and two that the department administers the examinations "with considerable charity."

The opinions of professors about the foreign language requirements

[2] I suggested that there should be no corresponding requirement for master's candidates.

are mixed but predominantly unfavorable. On the question of whether a reading knowledge of at least one foreign language should be required of master's candidates in economics, the replies were as follows:[3]

Yes for all students	18%
Yes for some students	25
No	46
Uncertain	8
No answer	3
Total	100

Some of those favorable to the requirement commented that the study of foreign languages helps the student to master English or contributes to his general culture. Those who thought the requirement should be limited to "some students" indicated that they were thinking of students whose research or career interests will be advanced thereby, or who were expecting to proceed toward the Ph.D. They were thinking, in other words, that some students ought to have language skills, but that it should not be required of all students. Significantly, no respondent commented specifically that a foreign language should be required of all master's candidates because of its general usefulness to economists.

When heads of departments were asked if their doctoral candidates "obtain sufficient proficiency in the foreign languages to be able to use them effectively in research and study," 60 per cent said "no," and another 8 per cent were uncertain or equivocal. On the other hand, nearly a third responded affirmatively.[4]

Opinions of graduate professors as to what should be done about the foreign language requirement for doctoral candidates were highly mixed. The wide disparity of opinion on the subject probably explains the delay of reform when so many are dissatisfied with the *status quo*. Recommendations on the foreign language requirement for doctoral students are presented in table 31.

A third of the graduate professors favor retention of two languages—though few insist that these languages should be exclusively French and German. Two-thirds would depart from the traditional two languages; 18 percent would continue the requirement of two languages but with provision for the substitution of a "tool" for one of the languages; 5 percent would require the substitution of mathematics or statistics; and the remainder (37 percent) would reduce the requirement to one language or eliminate it altogether.

Apparently there is considerable dissatisfaction among graduate professors regarding the administration of the foreign language requirements. Whereas only a negligible number of economics departments

[3] Schedule IV: 61 respondents.
[4] Schedule V: 27 respondents.

TABLE 31.—RECOMMENDATIONS OF GRADUATE PROFESSORS ON THE FOREIGN LANGUAGE REQUIREMENT FOR DOCTORAL CANDIDATES IN ECONOMICS[a]

Require two languages:	
French and German, no substitutes	4%
French and German but with various amounts of latitude and substitution of other languages	18
French and German or other two languages, stiffen examinations	11
Sub-total	33
Require two languages, but with provision for substitution of other tools for one language:	
Permit substitution of mathematics	11
Permit substitution of a "tool"	7
Sub-total	18
Require one language and mathematics or statistics	5
Require only one language:	
One language, stiffen requirements	12
One language, no change in rigor of requirement	2
Mastery of one language or dictionary knowledge of two	2
Sub-total	16
Eliminate language requirement:	
Eliminate it altogether	4
Eliminate except for students who need foreign language for their research or career plans	13
Eliminate, substitute mathematics or statistics	4
Sub-total	21
No answer	7
Grand total	100

[a] Schedule VII: 59 respondents.

now administer these examinations, there is considerable sentiment in favor of greater departmental responsibility in this field. This opinion is based in part on the feeling that linguistic needs in economics differ from those in other fields and that the department should have a greater voice in the standards and the conduct of the examinations. In response to a question regarding differences in the linguistic needs of graduate students in economics as compared with those of other students, nearly three-fourths of the professors responding thought there are significant differences. Some thought the needs of economics students are less rigorous than those of other fields, others commented that language requirements should be closely related to the students' interests

and objectives. A few suggested that the economist's language needs are related more largely to the acquisition of data from original sources than to contact with the scientific literature of other countries, whereas the examinations and standards are set mainly with the latter objective in mind. Few professors indicated, however, that they regarded the foreign language problem as a serious one, and few of those who favor changes base their position on the ground that the language requirement represents a significant hurdle which interferes with scholastic progress and professional development of graduate students. Many said, however, that the problem would be serious if the requirements were not laxly administered.

When asked about the frequent suggestion that the foreign languages should be used in connection with assignments for courses and seminars, the professors were again divided. About half were favorable or mildly favorable, about a third unfavorable, and the remainder neutral or uncertain. In considering the responses to this question, I wondered what percentage of the respondent professors would themselves be able to do assignments in a foreign language. However, some modest efforts to integrate the foreign languages with economic study is made in about a third of the reporting institutions.

TABLE 32.—OPINIONS OF GRADUATE STUDENTS REGARDING FOREIGN LANGUAGE REQUIREMENTS

	Advanced graduate students in residence in 1951–52[a]	Former graduate students who received Ph.D.'s in 1939–40 or 1949–50[b]
Beneficial	19%	21%
Possibly of some benefit	15	13
Of no benefit	64	62
No answer	2	4
	100	100

[a] Schedule IX: 81 respondents.
[b] Schedule X: 164 respondents.

Present and former doctoral students are less favorable to the language requirements than their professors (see table 32). Only about one-fifth of them feel that the meeting of these requirements was beneficial to them and nearly two-thirds said flatly that they got no benefit from the ordeal.

The only possible generalizations regarding opinion among economists on the language requirements are (1) that there is widespread

(though not unanimous) dissatisfaction with present practice, and (2) that there are many proposals for reform. On a subject so controversial and on which opinion is so scattered, recommendations in a report of this kind cannot be presented with the weight of any solid block of opinion behind them. They can have status only as one man's opinions. Nevertheless, for what it may be worth, I shall present those opinions. Most of the discussion will refer to the language requirements for doctoral candidates.

In general, the arguments of those economists who are in favor of the traditional language requirements for doctoral students are: (1) that economists would have contact with foreign literature; (2) that they should have access to foreign sources of data; (3) that the study of foreign languages helps to improve the student's command of English, contributes to his general culture, and helps to overcome provincialism; (4) that the prospective world leadership of America makes it incumbent upon us to have economists who know foreign languages.

Anyone can agree with all of these arguments, as I do. But the issue is whether these objectives can be achieved sufficiently by means of the traditional type of foreign language requirement to justify imposing this requirement on all doctoral students. I feel strongly that the traditional language requirement does not accomplish any of these objectives to an appreciable degree, and that there is little justification for it. By meeting that requirement most students do not gain useful access to foreign literature or foreign sources of data, their command of English is not appreciably strengthened, their general culture and breadth of perspective is not widened as much as it might be by the expenditure of equal effort in other directions, and most of them do not in this way become capable of assisting in the discharge of America's international responsibilities. In short, the traditional system represents little more than an irritating and meaningless hurdle which interrupts a student's work just at the time when he is most strongly motivated toward his field. Moreover, it is damaging to the morale of graduate students to impose upon them an onerous requirement the value of which cannot be adequately defended, and which many professors quite openly scoff at.[5]

Most economists do not rely heavily on foreign literature. They find

[5] The attitude toward the traditional requirement is apparently much more favorable among graduate faculties in the natural sciences, linguistics, history, and humanities than it is among social scientists. Hence, in almost all graduate colleges, change is resisted. The reasons for the more favorable attitudes of those in linguistics, history, and humanities are obvious. The natural scientists find the languages valuable because much important scientific literature is available in German, French, and Russian. This literature can be translated with relative ease because nomenclature and symbolisms are often standardized and because scientific papers are characteristically brief.

the foreign literature lengthy and extremely difficult to translate. Some economists need foreign languages for access to sources of data such as foreign documents, periodicals, bank reports, etc. But this need is restricted to a small minority, and is by no means common to the entire profession. Therefore, economists as a group are less enthusiastic toward the universal language requirements than their colleagues in many other fields. But because they and other likeminded professional groups are in the minority, and because of general academic conservatism, the foreign language requirements are likely to remain at many institutions, in something like their present form, for years to come. Hence, a few rather obvious recommendations for operation within the present framework may be in order.

First, every encouragement should be given to students to meet the requirements early in their careers and, if possible, to prepare for their language examinations before entering graduate study.[6]

Second, departments of economics should take some interest in the foreign languages, help students prepare, stimulate their interest in achieving enough mastery of languages to be able to use them, and draw foreign language materials into courses and seminars. If students are to be required to meet the language requirements, departments should help to make them as meaningful and as agreeable as possible, rather than leaving the student to meet—entirely on his own devices and without encouragement—a requirement which many of his professors openly regard as futile.[7]

Third, strong efforts should be made to alleviate the burdens of foreign students who come to this country with the intention of studying economics, but find that much of their time is demanded by the study of French and German at a time when they have not even conquered English. At the very least, such students should be permitted to offer English as one of their foreign languages.

Fourth, as much as possible should be done within the conservative framework of graduate college rules to permit greater latitude in the choice of languages offered to satisfy the requirement. Merely on grounds of availability of an important literature, Russian, Italian, and any of the Scandinavian languages can be defended as substitutes for French or German. And on grounds of availability of source materials for the study of regional developments, international economics, etc., any literary language in the world might appropriately be chosen.

[6] Cf. Carl C. Brigham, *Examining Fellowship Applicants,* Social Science Research Council, Bulletin No. 23. p. 23. Dr. Brigham points out the futility of awarding fellowships and scholarships to graduate students who will have to spend much of their time in satisfying language requirements.

[7] Cf. "Report of Subcommittee on Language Requirements," *Report of Fourth Annual Meeting of the New England Conference on Graduate Education,* 1947.

Along this line, some institutions have fallen into the curious habit of assuming that if a student asks to substitute, in place of French or German, a language he happens to have studied, he is *prima facie* trying "to get away with something." Thus, in some institutions, Spanish may be substituted for French only if the student has *not* studied Spanish before. If he has studied Spanish, then he must be examined in French. This kind of attitude toward the languages is clearly nonsensical.

Fifth, if language requirements are to be retained, departments of economics should use their influence to stiffen the requirements so that students will acquire at least some useable linguistic skill. In many institutions, the requirements while consistently retained are at standards so low that the student has virtually nothing to show for his efforts. It would seem that if the task is to be done at all, it should be done well enough to produce a tangible benefit for the student.

But it is to be fervently hoped that present requirements can be modified. The alternatives, listed in an *ascending* order of preference are as follows:

I. Various arrangements involving two foreign languages with low standards such as now generally prevail and with various provisions for substitution (essentially the present system in most institutions)
   1. French and German, no substitutions
   2. French and German, with possibility of substituting another language for one of these
   3. French and German, with possibility of substituting other languages for either or both
   4. Two languages with possibility of substituting one research tool
   5. Two languages with possibility of substituting one research tool or one collateral field
   6. Two languages with possibility of substituting one collateral field
   7. Two research tools of which foreign language may be one or both

II. No requirement whatever

III. Any of the arrangements under I above but with exacting standards such that the language or tool or collateral field will become an important useable asset for the student.

IV. Various arrangements involving one foreign language, one research tool or one collateral field with exacting standards such that student will gain an important useable asset.

1. One collateral field
2. French or German
3. One foreign language to be chosen from any literary language in the world—the choice to be made in terms of the students' research interests and plans
4. One foreign language, other research tool, or collateral field
5. One foreign language or other research tool

This list does not, of course, cover all the possibilities, but it does indicate the range. The reader can easily fit other alternatives into the pattern. In general, the reasoning underlying the order of preference is this: the requirement of two languages or other subjects with the low standards that have become customary is worse than no requirement whatever. If we are to have such a requirement, as I think we should, then let us impose exacting standards so that it will result in tangible accomplishment for the student. But if we impose exacting standards for *two* subjects, this becomes more than the student can do and still meet the other essential demands on his time and energy. Therefore, the best solution is to require one subject with exacting standards. Of the subjects from which to choose, I recommend that they include any literary foreign language or any other important research tool. Among these other tools I should include mathematics, law, accountancy, socio-psychological techniques, and historical techniques.[8] I do not favor the inclusion of a collateral field such as sociology, political science, industrial management or anthropology, unless it can clearly be defended on the ground that it contributes to the student's *research* equipment. I feel that the requirement should be designed specifically to sharpen the student's research ability and proficiency, and should not be merely another minor field. In line with this thinking, I should recommend that the student always be required to defend his choice of a subject in terms of his research interests and plans.

These recommendations are based upon three general principles: (1) that whatever subject a student may elect or be called upon to offer, an exacting standard should be imposed such that when he has met the

[8] A few graduate departments of economics now require a rudimentary knowledge of accounting concepts. I concur in this requirement and have suggested that it be included in the admission requirements along with elementary mathematics (see p. 88) rather than in the degree requirements. In response to a question as to whether proficiency in tool subjects other than foreign languages should be required for advanced degrees, about two-thirds of the respondent professors mentioned mathematics, one-fourth mentioned accounting, one-fifth mentioned logic and scientific method, and a handful mentioned library techniques. Many thought of these, however, as substitutes for, rather than additions to, the foreign language requirements. At least one university has experimented with a special graduate course in accountancy designed expressly for students in economics. Another has experimented with a non-credit course in the use of the library and sources of data.

standard he will have a viable intellectual asset, (2) that the requirement should be oriented toward research and should quite specifically increase the student's research capacities, and (3) that the requirement should result in the production of a generation of economists having diverse research skills—some in mathematics, some in each of many foreign languages, some in historical research, etc.

When the term "exacting standards" is used, I have in mind, for example, that the student who offers a foreign language would be able to read any literature in the language with such facility and speed that it would be feasible for him to read technical books, government reports, and newspapers in the language. If he offered mathematics, he should be able to read the literature of mathematical economics and statistics with facility.

To meet this standard in only one field would probably involve more work than most students now devote to the foreign languages. In general, on the basis of numerous inquiries but no formal survey, I would guess that to meet the present low-standard requirements of French and German requires of most students the equivalent of perhaps 3 to 6 months of full-time work, the amount depending on the student's linguistic background and facility. This is probably insufficient time for achieving any worthwhile results from the requirement. I should think that standards might be thought of in terms of at least 6 months of full-time work—preferably more. If the student is permitted to invest this time in a subject which he feels of value, the resistance to the meeting of this requirement would be less than that now encountered with the present foreign language requirements which are often considered useless. In considering the amount of time required, it should be remembered that it is possible for students to prepare for these requirements during undergradaute years or before entering graduate study, so that ideally no time need be taken from graduate study in order to meet the requirement. Indeed, the profession should work unremittingly to encourage prospective students to prepare in the tool subjects before entering graduate study.

It is sometimes objected that a plan under which the student may elect a substitute for the foreign languages will result in the latter being squeezed out altogether. Whether this will be true will depend, of course, on the relative difficulty of the various alternative requirements and on the kind of advice students receive. Data based on experience at the University of Minnesota suggest that the languages do not necessarily disappear when other options are available. During the period from 1949 to 1951, 71 percent of the Ph.D. candidates at that institution (in all fields) had the option, in place of one of their language examinations, of presenting a research technique or a collateral

field. Yet only 24 percent of the candidates exercised this option.[9] The remaining 76 percent offered the customary two languages.

The above discussion has related exclusively to the language requirements for the doctorate. For the master's degree, I see no compelling arguments for requiring a foreign language or research tool (other than statistics which is considered under the common core). Much more important for master's candidates is to achieve a thorough grounding in economic theory and other fundamentals.

Mathematics

The increasing utilization of mathematics by economists has led to great interest in the inclusion of mathematics as one of the tools which graduate students should be required or advised to acquire. Already nearly a fourth of the reporting institutions permit doctoral candidates to substitute mathematics for one of the foreign languages (see p. 125), and several others impose mathematics requirements (usually "through calculus") in addition to the foreign language requirements. Many professors have indicated their concern about the problem of mathematics training and many departments are considering the requirement of mathematics in some form.

About two-thirds of the respondent graduate professors think that mathematics should be included as a requirement for the Ph.D. Most of these hold that this should be as a substitute for, rather than addition to, a foreign language requirement. Also about two-thirds of the respondent graduate professors think that mathematics should be required "for some or all" master's students.[10] In reply to a question about the present ability of doctoral candidates to use mathematics for economic analysis, the graduate professors responded as follows:[11]

Good		2%
Fair		41
Poor		44
Uncertain		7
No answer		6
	Total	100

To stimulate improvement in the mathematical skills of doctoral candidates, the respondent professors suggested that students be encouraged or required to take courses in mathematics, that examinations analogous to the foreign language examinations be given, that admis-

[9] University of Minnesota, *Graduate Faculty News Letter*, Dec. 10, 1951, p. 4. Among the research techniques and collateral fields presented were: mathematics, statistics, accounting, public opinion analysis, research methods in business analysis, methods in higher education, surgical technique, and experimental psychology.

[10] Schedule VII: 59 respondents.

[11] *Ibid.*

sion requirements include mathematics, or that key economics courses be pitched at a level that would require mathematics as a prerequisite. The great majority were opposed, however, to giving graduate credit for elementary courses in mathematics or other tool subjects.

Many present and former graduate students also indicated concern about mathematics. When asked about inadequacies in their earlier training, or in their graduate programs, more mentioned mathematics than any other subject.

My conversations with professors and graduate students indicated an unmistakable and profound interest in the problem of mathematics for economists. At the same time, there is great perplexity as to how to solve the problem, and rather general groping toward solutions. The difficulty, of course, is that there are no *easy* solutions. The effort to enforce standards of mathematical proficiency which many members of the profession believe are demanded by current developments in economics would add an onerous burden for both students and faculty—a burden so onerous that few have the courage to insist on it.

Opinions on the place of mathematics range from the view that it is unnecessary (and that those who use it in economic analysis are arrogant pretenders) to the view that every economist should be a thoroughly trained mathematician. Fortunately, a committee on the Mathematical Training of Social Scientists, including representatives from the interested professional associations, has been at work; also the Social Science Research Council has sponsored a committee to survey the role and uses of mathematics in various social science disciplines.[12] It is to be expected that the deliberations of these two groups will bring forth useful information and suggestions. My comments on the problem in advance of the reports of these committees may be little more than a useless act of supererogation.

My first assumption is that mathematics is a highly important and useful tool in economics both for economic analysis and for statistics, and that the problem of mathematical training is a serious one for which satisfactory answers are urgently needed. As the discipline is developing, and is almost certain to develop in the future, the demands for mathematical training will surely expand. It is not difficult to imagine that the relation of mathematics to economics may some day resemble that between mathematics and physics or engineering. This possibility is presaged not alone by developments in economics but also by the even more rapid and revolutionary developments in statistics.

[12] I am indebted to Professor William G. Madow, Professor of Mathematics at the University of Illinois, a member of these committees, for many suggestions. He should not, however, be held responsible for any of the conclusions or recommendations which follow.

At the present stage of the discipline, mathematical ability is needed by economists at three levels. First a few economists, but a steadily increasing number, should have a command of mathematical skills at the most stratospheric level. These people would be depended upon to develop the areas of mathematical economics, econometrics, and statistics. They would be qualified both to read the literature of these fields, to formulate problems for solution in mathematical terms, and to solve these problems. I shall call these *mathematical economists*. Second, a larger number of economists, whom I shall call *mathematical readers*,[13] should be able to read with comprehension a substantial portion of the mathematical and statistical literature, for example, *Econometrica*, the more abstract articles in the *Journal of the American Statistical Association*, or books in which ideas are presented in mathematical form such as Leontief, *Structure of American Industry;* Marshall, *Principles of Economics* (appendix); Samuelson, *Foundations of Economic Analysis*. Some of these mathematical readers, it would be hoped, might be able to set up problems so that a mathematical economist could translate them into mathematical form and solve them—in other words, to be able to use the services of mathematical economists intelligently and effectively.[14] Third, most economists (I should be willing to say *all* economists) should have a sufficient orientation in mathematical ideas, symbols, and mode of thought to make economic theory and statistics more intelligible and to permit them to read easily, with comprehension, and without "formula fright" books such as Stigler, *Theory of Price* and Boulding, *Economic Analysis* (Part IV). They should understand such simple ideas of algebra, geometry, and calculus as variable, function, equation, simultaneous equations, differential, integral, limit, vector, tangent, logarithm,

[13] The Social Science Research Council, in sponsoring its 1953 Summer Institute in Mathematics for Social Scientists, gave as the objectives of the Institute: "to equip students to (a) formulate social science problems in mathematical form, (b) read mathematical literature in their chosen fields, and (c) do further work in mathematics and statistics beyond the level of the calculus if they find need for this in connection with their work in social science."

[14] A critic writes: "You mention a second category of economists termed *mathematical readers*. I think you are a little too modest in your estimate of their abilities and creativeness in formulating economic problems mathematically. Many of the great figures in the history of mathematical economics have themselves probably fallen into this category as far as training is concerned. Jevons and Walras are two names that come to mind but one could enlarge the list. Such people make no pretense at being fully trained mathematicians, but having real abilities in the field of economic analysis and logico-mathematical thinking they are able to puzzle and puzzle and finally state in terms of mathematics their economic theories. I am sure that many in this category will turn out to be more fruitful workers than undergraduates who have concentrated in mathematics and who have been persuaded to go into the field of economics. Incidentally, you will inevitably find that the very best undergraduate mathematicians will not be the ones who gradually transfer into the fields of statistics and economics, I fear."

matrix, etc. To be sure, these concepts and ideas can be understood without reference to mathematical symbolism or manipulations, but they are much more clearly understood with a modicum of training and experience. Economics and statistics involve so largely the manipulation of quantitative variables and rely so heavily on algebraic and geometric formulations that it borders on stupidity for anyone to undertake serious study of economics at the graduate level without the kind of elementary mathematical background indicated. I shall now comment briefly on each of these three groups of economists as classified according to degree of proficiency in mathematics.

The principal problem with reference to the "mathematical economists" (those with a very high level of proficiency in mathematics), is to insure either that a substantial number of economists will be induced to acquire a high level of mathematical skills, or that a substantial number of persons with highly developed mathematical skills will be pursuaded to apply their knowledge to economics. If this does not happen, economics will almost surely lag behind other disciplines. It is difficult to induce economists to acquire a high order of mathematical skill. Few students of economics acquire a substantial mathematical background in their undergraduate years. By the time they reach graduate school and recognize the need and the opportunity, it is usually too late for them to afford the time and energy necessary to become proficient in mathematics—particularly in view of the fact that years of work are involved for which no graduate credit can be earned.[15] This brings us back to the trite, but nevertheless sound, proposal that more students should have substantial mathematical training as undergraduates and, in order to accomplish this, that more should begin mathematics early in their undergraduate careers. This raises a host of problems as to how to increase the number of students who come to graduate work with adequate prior preparation.

Another suggestion is to encourage students with substantial undergraduate work in mathematics to enter graduate study in economics.[16] There are beginnings of developments along this line. Mathematics departments are beginning to recognize more fully their relation to and responsibility toward the social sciences, and in some institutions are attempting to work more closely with the social sciences. I believe that economics departments might well take the initiative in developing closer liaison with mathematics departments (and possibly also with

[15] Cf. Paul A. Samuelson, "Economic Theory and Mathematics—an Appraisal," *American Economic Review* (supplement), May 1952, pp. 56-66.

[16] Of the group of 358 present and former graduate students responding to my questionnaires, 11, or 3 percent, indicated that their undergraduate major had been in mathematics or engineering. Some others no doubt had had considerable work in mathematics.

engineering colleges) to pave the way for an increasing flow of students with mathematical training into economics. Students with mathematical training should, however, be urged to enter economics only in those economics departments where the staff includes economists and statisticians with thorough mathematical training. These staff members are needed if the student is to learn how to combine mathematics and economics fruitfully.

My suggestions regarding the foreign languages and other research tools (see pp. 131-3) were intended to help in producing a larger flow of "mathematical readers." According to this suggestion, students would be permitted to elect mathematics as their research tool. If they did so, they would be expected to achieve a degree of proficiency such that they could read readily and with comprehension, the *Journal of the American Statistical Association, Econometrica,* and other mathematical literature. This is no mean requirement. To achieve this would involve at least as much effort as to attain the suggested standard in a foreign language. (Indeed, one of the obstacles to the election of mathematics as a tool subject might be its difficulty as compared with a foreign language or other tool.) As indicated, it would be expected that some of the students achieving a genuine reading knowledge of mathematics might in addition be able to formulate problems so that more highly-trained mathematicians could set them up and solve them. It would even be hoped that a few of the "mathematical readers" would themselves develop some ability in setting up problems in mathematical form or in solving them. On the other hand, students who had met the suggested requirement would have much broader and deeper mathematical training than the "math through calculus" which many are thinking of when they propose the substitution of mathematics for one of the required foreign languages.[17]

While it is desirable to increase the flow of mathematical economists and mathematical readers, it is surely not necessary—at least at this stage in the development of the discipline—that every economist should have mathematical training at either of these levels. A case can be made, however, for requiring all to have an understanding of basic mathematical ideas as a background for the ideas and logical processes underlying both economic theory and statistics.[18] This requirement could

[17] It is possible that all students offering economic theory or statistics as their major fields for the doctorate should become "mathematical readers."

[18] Dr. Carl C. Brigham in his 1935 study *Examining Fellowship Applicants* (Social Science Research Council, Bulletin No. 23) stated (p. 35): "It is hard to reconcile this rather general mathematical deficiency with notions of the nature of social science. Certain fields of economics, politics, psychology, and other social sciences are developing very rapidly in mathematical directions. Disregarding entirely the possibility of individual contributions to the development of new techniques, it is difficult to see how a person who has forgotten

be handled in at least three ways: (1) as an admission requirement, (2) as a prerequisite to the courses in statistics and/or theory, or (3) as a requirement to be met at some time in the graduate period. I strongly prefer the first of these alternatives. I believe that the profession cannot reasonably delay much longer in requiring for admission to graduate study a knowledge of elementary mathematical concepts. As a corollary to this, the graduate courses in statistics and theory should be pitched at a level which would require this knowledge as a prerequisite. At least during the transitional period when this requirement is being established, each graduate department should offer a course, without credit, in which the student might acquire the desired mathematical background without having to traverse the lengthy sequence of traditional and partially irrelevant elementary courses given in mathematics departments.[19] At several institutions, such courses have been or are being offered. On the whole when they have been well-taught and supported by the faculty, the response of students has been encouraging. At some institutions, the student response has been so great that there is some question as to whether it would not do more harm than good to impose a mathematics requirement. Graduate students can be made keenly aware of their mathematical needs and deficiencies and can be persuaded to do something about them voluntarily.

Verbal Communication

A frequent complaint against graduate students in economics is their alleged mediocrity in the use of written and spoken English.[20] Employers often refer to this defect, a surprising number of present and former graduate students speak regretfully of their lack of competence in the communication skills, and a large majority of graduate professors have complaints on this score. Table 33 presents a summary of

elementary algebra can even become *well read* in the field of social science. The committee is of the opinion that elementary mathematical tests should be given to all applicants and that the weight given to their scores on such tests should depend on their proposed programs of study. To attempt to turn more mathematically illiterate scholars into fields already overcrowded with intellects of similar constitution does not appear to be a profitable venture. With respect to the fundamentals of foreign languages and mathematics, the committee cannot afford to send their first-year fellows on to graduate schools in the plight of the *Puck* or *Punch* plumber who has to go back for his tools."

[19] Some mathematics departments are developing elementary semester or year courses which would serve this purpose very well. One of the courses most frequently mentioned in this connection is that given in the College at the University of Chicago. The textbook for this course is: E. P. Northrop and others, *Fundamental Mathematics* (3 volumes), 3 ed. University of Chicago Press, Chicago, 1949.

[20] In this discussion, I am not including ability to read economic literature, even though this was included as one of the required verbal skills (table 30). The reason for this omission is that ability to read is the one ability which is thoroughly tested under existing practices.

TABLE 33.—OPINIONS OF GRADUATE PROFESSORS REGARDING STUDENTS' ABILITIES IN VERBAL COMMUNICATIONS

	Master's candidates[a]		Ph.D. candidates[b]	
	Ability to write	Ability to speak	Ability to write	Ability to speak
Good	16%	20%	14%	19%
Fair	61	66	51	63
Poor	20	11	22	12
No answer	3	3	13	6
Total	100	100	100	100

[a] Schedule IV: 61 respondents.
[b] Schedule VII: 59 respondents.

the opinions of graduate professors on the writing and speaking abilities of their students. As shown in the table, about three-fourths of the responding professors thought that the ability of students to write and to speak is below par. When asked what ought to be done to overcome the deficiency, graduate professors responded with a variety of proposals as follows (the percentage refers to the relative number of professors mentioning each proposal):

1.	More emphasis on written and oral reports, on essay and oral examinations, and on organized discussion and seminars	26%
2.	Remedial clinics, special courses, or other special remedial measures	13
3.	Encouraging students, through informal counselling, to improve their writing and speaking	11
4.	Appraisal of students' work partly on the basis of oral or written presentation	7

A third of the respondent professors thought, however, that the problem should be handled at lower educational levels, and not in graduate school. This position presumably implies that proficiency in writing and speaking should be required for admission to graduate study, and that therefore these skills should not be a special concern of graduate faculties.

My own judgment is that the communications skills are of utmost importance to future economists, and that it is incumbent upon graduate faculties to give careful attention to the development of these skills. This job might be done partly through requiring a minimal standard of competence, in writing at least, for admissions. For example, admissions officers might examine some of the prospective graduate students' written work. If entrance examinations are given, the students' writing ability could easily be tested. But even if entrance requirements of this kind were imposed, it would still be desirable to develop further the students' skills during his graduate years.

In my conversations with graduate professors and students, I gained the distinct impression that a great deal of graduate study takes the form of reading and lecture courses in which students occupy relatively passive and absorptive roles as readers and listeners rather than active and creative roles as researchers, writers, speakers, and discussants. This was true even in many so-called seminars. While I would not go to the extreme of arguing that there is no place in graduate instruction for the lecture or for systematic assigned reading, yet I feel that true graduate instruction demands of the student a great deal of the active and creative pursuits I have mentioned. My first recommendation, then, is that steps be taken to insure that all graduate students have many opportunities for the active and creative type of educational experience. I believe that most departments would be well advised to appraise their graduate programs from this point of view.

Second, I have recommended that a thesis, or its equivalent, be required of all candidates for the master's degree. One of the strongest arguments for the thesis is that it provides the student with a rigorous test of his literary skill. The formalities surrounding the thesis provide strong incentives for him to do his best work, and from the individual guidance of his professor he should receive many helpful suggestions regarding writing.[21]

Third, all written and oral work of students should be graded partly on the basis of the quality of presentation.

Fourth, greater attention should be given to opportunities for genuine discussion of economic subjects among students and between faculty and students. In one university after another I was impressed by the apparent lack of vigorous intellectual discussion among students. Admittedly, for a variety of reasons, discussion is more difficult today than it was 15 or 20 years ago. But this does not eliminate the need for training students in the art of expressing themselves informally on economic subjects. The present situation calls for conscious efforts on the part of the faculty to provide opportunities and stimulus for greater and more frequent student discussion.

Finally, fifth, the experience of graduate students as research and teaching assistants can be helpful from the point of view of developing skill in the art of communication. This leads us, however, to the subject of the next two chapters.

[21] In order to give students practice in writing for lay audiences, a science department in one university has required each of its students to rewrite his dissertation in the form of an article suitable for publication in a popular periodical.

Chapter 9

RESEARCH TRAINING

In Chapter 4, I suggested that competence in research should be one of the objectives of graduate education in economics. With reference to the master's degree, I proposed that a candidate should be able to carry on limited research projects under general supervision, or to serve as a useful research assistant under the detailed supervision of a mature research worker. Similarly, with reference to the Ph.D., I suggested that a candidate should be able to assume considerable responsibility as a research worker both in the theoretical analysis of problems and in the carrying out of operations to test the hypotheses suggested by theory.[1]

Competence in research is not the sole objective of graduate education. It is an important objective in the master's program and a leading—perhaps major—objective in the doctoral program. That training in research is an essential ingredient of graduate education can be defended on two grounds: (1) that it is good to produce a flow of economists who are equipped and motivated to engage in research at various levels, and (2) because experience with the methods by which knowledge is extended is an essential element in the training of all economists who are to use the products of research, whether they are to serve in teaching, civil service, or other capacities. This point is so evident and so widely accepted as to require no further comment.

In considering the place of research training in the graduate program, I shall take up first some general considerations relating to the environment provided by graduate departments, and then deal specifically with the master's thesis and doctoral dissertation.

Research Environment

The most important weakness of many graduate departments of economics is a failure to create a *research environment* for graduate students. I mean by this an environment in which students are literally surrounded by research, in which they can scarcely avoid frequent and first-hand contact with scholarly investigation both as observers and as participants, and in which the spirit of inquiry is prevalent. Unhappily, in some institutions which offer graduate instruction in economics, the failure to provide such a research environment is due simply to the fact

[1] See pp. 47-8.

that little research of consequence is in progress. But even in those institutions where research flourishes, a favorable environment for graduate students is sometimes lacking because students have little first-hand contact with the ongoing research program either as observers or participants. In advancing these criticisms, I do not intend a blanket indictment of every graduate department of economics. Some have succeeded remarkably in integrating graduate students into a productive research program. But there are few departments which could not show improvement in this respect.

On the whole, the natural sciences have far surpassed economics in the creation of an environment favorable to research training. In these fields, research is actively practiced by most graduate professors almost as a matter of course. Students work daily in laboratories alongside their professors. They are aware of the various projects of professors and other students. They observe the objectives, the methods, the difficulties, and the results. In the process of daily living, they become conditioned and oriented toward research. Contrast the situation of the typical graduate student of economics. He often knows little about the research work of his professors and other graduate students except through occasional seminar papers. He engages in little research himself until he writes his thesis or dissertation. His work then tends to be an individualistic enterprise in which only he and, at infrequent intervals, his professor are concerned. There is little of the daily working together, the frequent consultation, the sharing of problems that characterizes many scientific laboratories. What I am suggesting is that graduate departments of economics should emulate, in spirit and practice, the research environment of the scientific laboratory.

How can this be done? First, a substantial amount of genuine research must be in progress. Second, students must have the opportunity to become intimately acquainted with this research—with its objectives, methods, difficulties, and results. This calls for seminars and discussions in which the students are observers and participants. It also requires close personal contacts between professors and students. Third, instruction in research methods must be given (perhaps, but not necessarily, by the introduction of special courses such as have been inaugurated at several institutions). Fourth, and most important, students must themselves engage actively in research. Only in the kind of research environment where these conditions are met are students likely to acquire favorable motivation toward research, understanding of its methods, ability to criticize the research findings of others, and research competence of their own.

A satisfactory research environment can be achieved without any special organization for the purpose. It is necessary only that staff

members be actively engaged in research; that graduate students participate actively in research—not only in connection with their theses and dissertations but also in other ways; and that there be adequate means for constant communication among staff members and students on research activities. In such an environment students would function as apprentices, gradually passing from simpler to more exacting tasks, and eventually on completion of the doctorate achieving a considerable competence as independent research workers. To provide useful apprenticeships for students, however, is not always automatic or easy. Some kinds of research, notably theoretical analysis, are not suited to work by more than one person. It is difficult to utilize inexperienced research assistants on any but routine clerical work from which educational returns are not great. Students come and go, and there is no assurance that projects started will be finished or will be finished in good time. It is often easier to do a job oneself than to explain to another how to do it and to supervise his efforts. It is often more efficient to hire a well-trained professional person than to utilize student labor. All of these factors tend to discourage efforts to assimilate students into the ongoing research programs of staff members. But despite difficulties, the need remains; and the need is so great that it is essential to find ways to adapt research programs to instructional requirements. Academic research is intended to advance knowledge, but it is also intended to contribute to the training of students. In the achieving of the first of these purposes, the second should not be ignored.

Organized Research

It is probable that organized research agencies, which are becoming increasingly common in our universities, offer promising possibilities for improving research training. These research agencies include the labor relations institutes, area study institutes, research centers, bureaus of business research, agricultural experiment stations contract research projects sponsored by governmental agencies, etc.[2] These agencies have staff, budgets, and ongoing programs. They often sponsor a variety of research enterprises including both individualistic and co-operative or "group" projects. When research training becomes one of their objectives—which unfortunately is not always the case—they provide an ideal setting in which graduate students can function as apprentices in research, and can be on the "inside" of an active program. It is not essential that graduate students be paid for their work in every case, though if finances permit such payment, pecuniary as

[2] Sometimes also close working relations are developed between departments of economics and outside private or public research institutions.

well as educational problems are solved in happy conjunction.[3]

With such organized agencies, combining the objectives of inquiry and training, the student is able to observe and participate in research conducted under conditions similar to those he will experience if he later becomes a research worker in government or business. He has an opportunity to become acquainted with the kind of research—especially empirical research—which transcends the limits of the traditional solitary scholar whose only facility is a library. He can receive the stimulus which comes from working as a member of a team. Indeed, the advantages are so great that there is doubt in my mind as to whether a graduate department of economics can afford to be without some type of organized research program. This would be a counterpart of the laboratory in the natural sciences.

I am not suggesting, however, that mere formal organization is enough. There are dozens of academic research institutes and bureaus which, though doubtless performing valuable functions, are not accomplishing the purposes here outlined. Some of them are not really engaged in research at all, and some are virtually inert. What is needed is an active organization engaged in genuine research, and providing opportunities for student participation.

It would be foolish to suggest that every department of economics should establish an organized research agency of particular specifications. Departments vary in history, structure, personnel, specialized interests, financial resources, and need. Some may be able to accomplish high-quality research training with no organization whatever. Nevertheless, to be more specific, I shall try to indicate some of the features of one kind of desirable research organization, and to suggest how it might function. I shall refer to it as an institute of economic research.[4]

An Institute of Economic Research

The institute would have a budget, a director, a staff, an office, research facilities, and a research program of its own. There would be close connections and considerable overlapping between the staffs of the institute and of the economics department. Members of the institute staff might teach part-time, and members of the teaching staff might join the institute on a part-time basis or full-time for temporary

[3] There is no reason for supposing that a graduate student in economics might not participate actively in a research project for graduate credit and without financial reward, just as a chemistry student may undertake research assignments without compensation. Decency would require, of course, that the student be given recognition for his contributions and not be exploited by assigning him tasks of little educational worth.

[4] Of course its scope might be limited to a particular area such as labor, international economics, public finance, business cycles, etc. However, there are advantages in not so restricting it to a narrowly specialized field.

periods. The program of the institute would be reviewed by a committee including members of the teaching staff. The director of the institute would be responsible to the chairman of the department. The institute, in other words, would be an integral part of the department. The importance of this close relationship is obvious if research training is to be one of the functions of the institute.

In carrying on its own research program, the institute would provide abundant opportunities for graduate students to observe and to participate. Ideally, it would provide research assistantships with stipends, but it should also provide a research workshop to provide practical experience for students who do not receive remuneration.

The institute should also facilitate the research of members of the teaching staff and of graduate students. It should encourage their research. It should provide technical assistance and advice, for example, on statistical problems. It should provide, for approved projects, facilities or funds for clerical assistance, machine tabulations, travel, survey expenses, books, etc. It should provide leadership and assistance in obtaining grants from foundations and government contracts, and it should be a clearing house for contacts with outside sources of funds. It should maintain facilities for communication among all staff members and students on research in progress—perhaps by sponsoring frequent research conferences, seminars, and discussions, and by duplicating and distributing research memoranda.[5]

Such an institute need not interfere with the research activities of staff members who work best independently, or who are engaged in the kind of scholarly endeavor which requires solitude. Its function would be to help and encourage where such help and encouragement are useful. Its duty would be to carry on its own research, to stimulate the research of others, and to create a research environment in which graduate students could learn from observation and participation. Such an institute would be the counterpart of the *laboratory* which has been so eminently successful in the natural sciences. Just as physicists need cyclotrons, electronic microscopes, and laboratory technicians, econo-

[5] Dr. Paul Webbink of the Social Science Research Council has enumerated 11 key functions of university research organization in the social sciences: (1) to assume responsibility for acceptance and expenditure of research funds from all sources, (2) to review project proposals and to handle solicitation of funds, (3) to appraise research needs in light of resources and personnel, (4) to provide guidance and counsel in the planning of research, (5) to give counsel in the execution of projects and appraisal of results, (6) to foster research talent, (7) to provide facilities, (8) to encourage communication and cooperation among the several social sciences, (9) to represent the social sciences in negotiations with the graduate college or central administration, (10) to record research progress, and (11) to aid in publication. See "University Organization for Social Science Research," Social Science Research Council, *Items,* June 1948, pp. 1-5. See also: Donald Young and Paul Webbink, "Current Problems of Council Concern in Research Organization," *Ibid.,* Sept. 1947, pp. 1-5.

mists need facilities for surveys, tabulation equipment, and clerks. Just as physicists require laboratories where professors and students work together in an atmosphere conducive to the relationship of apprentice to master, economists need organized research programs in which students can observe and take part. Adequate research training in economics requires more than the accumulation by a student of the required number of hours of course credit, to be followed by a few conferences with a professor regarding a thesis or dissertation plan, and then a lengthy and lonely period of poring over books in a library. This is not to suggest that books are useless or that library research is passé, but only that a department which pretends to train students in research ought to offer more than that.

It may be objected that the cost of a scheme such as is suggested would be prohibitive. There are several answers. First, many universities already have institutes or formalized research organizations of one kind or another.[6] Some of these are already performing the indicated functions or could be adapted to the need without great increases in cost. Second, the outlay from university funds need not be large; the modest support by a university can be handsomely augmented by research funds for worthy projects from foundations and government agencies. Third, if universities can afford the kind of money required for research in physics, chemistry, medicine, and other material sciences, there is no reason to suppose that they cannot afford the relatively modest amounts required for research in economics. The traditional view that economists require nothing more than books can no longer be sustained.

There are, of course, dangers in the suggested scheme. First, it is easy, in enthusiasm for organized research, to belittle the efforts of the lone scholar whose only tools are his own intellect and the writings of others. Many of the great contributions of economics have been made

[6] Of 53 reporting graduate departments, 31 (58 percent) indicated that they have special funds to support research. Of these, 20 departments reported amounts and sources as follows:

Amounts	*Number of departments*	*Sources*	*Number of departments*
$ 0— 3,000	4	The University	17
3,000— 10,000	5	Foundations	7
10,000— 20,000	4	Industry	6
20,000— 40,000	3	Government	5
40,000— 70,000	1		
70,000—100,000	1		
100,000—130,000	2		

Of the 53 reporting institutions, 29 indicated that they make a practice of assisting individual faculty members in their research. The kinds of assistance in the order of their frequency were: direct grants, provision of research or clerical assistants, reduced teaching loads or paid leaves of absence, and funds for travel and publication.

by men working with only these tools supplemented by their own acute powers of observation (Smith, Ricardo, Mill, Marshall, Keynes, and many others). The same thing can be said of physics. Einstein's great contributions resulted from no "organized" research project. Nevertheless, in both economics and physics there is a place for research utilizing laboratories, facilities, organization, and financial support. Second, efforts to obtain funds from outside sources may divert energies from research in which staff members are interested and consider important to whatever research outside agencies are willing to support. Universities might thus become mere "project centers" engaged in programmatic research to the neglect of their main functions in the advancement and dissemination of knowledge. Related to this is the danger that the prestige going to those staff members who raise or receive money for research projects may cause discouragement to those staff members whose talents or interests lie in other directions. These are genuine dangers, but they are not inevitable. Obviously, a research program should be operated with good judgment and a sense of proportion, and without bureaucratic control over the creative efforts of scholars. But it is better, at least for purposes of research training, to have narrow programmatic research in progress than none at all.

Empirical Research

A special aspect of the research environment in which graduate students are trained is the *content* of the research which they observe and in which they participate. My impression, though this is difficult to confirm, is that academic economic research is very heavily weighted toward the theoretical, the historical, the critical, the synthetic, and the appraisal of public policy; and in contrast relatively little emphasis is given to empirical research which seeks to obtain new facts useful for testing hypotheses. Most of the research is of a kind that can be done in a library; it is bookish and such data as are used are drawn from secondary sources. It is of course understandable that this should be so. The traditions of economics are scholarly and literary. Theory built upon certain exiomatic principles has always been its leading technique. Economists have drawn their facts from general observations of the market place and from statistical aggregates usually collected by governmental agencies. This has proved fruitful for many problems, and in no sense do I suggest abandonment of these lines of inquiry. I suspect, however, that the emphasis has developed through following lines of least resistance and least cost. It is easier, cheaper, and in some ways more satisfying, to conduct economic research from the library cubicle than it is to go to the outside world for facts. Thus generations of academic economists have studied the determination of prices on the

basis of conventional postulates about the behavior of firms; yet our knowledge of how firms actually behave is still rudimentary. Or thousands of academic economists have considered theories of employment involving hypothetical consumption functions while only dozens have labored to find the factors underlying the responses of consumers to changes in income.[7]

Some of the reluctance of economists to do detailed empirical research is, in my judgment, due to the desire to construct systems at the highest levels of abstraction, and to a wish to solve the world's practical problems at the highest levels of policy determination. While the problems of the world press for answers it seems futile and pedantic to conduct empirical research about the details of economic behavior. Yet it may not be possible to solve the larger problems until more reliable and more detailed knowledge about the real world is available.

Should not steps be taken to broaden the base of economic research, i. e., to increase the relative emphasis placed upon empirical research —particularly upon that branch of empirical research which is concerned with the behavior of people in their roles as consumers, workers, investors, business men, government officials, etc.?[8] Should not graduate students be exposed to, and become interested in, this kind of empirical research? Would not the profession be advanced if coming generations of economists would devote somewhat less of their research efforts to theory, history, problems of national policy, criticism, and syntheses, and more to the empirical study of human behavior in its economic aspects?[9]

If the answer to these questions is in the affirmative, then the case for the "institute of economic research" is strengthened. Empirical research requires funds, clerical assistance, facilities, technical services, and other aids which are not ordinarily available to the professor working without an organization to support his efforts. With the establishment of such institutes, a regularized method of financing and executing empirical research is provided.

[7] This methodological bias was particularly impressed upon me when I was recently asked to furnish a list of economists who are engaged in behavioral research. I found difficulty in naming a half dozen.

[8] It might be supposed that psychologists and sociologists could do the job for economists. But unhappily except in a few isolated cases, they have so far shown little interest in the economic aspects of human behavior. There is a kind of intellectual vacuum at the very foundation of economics and relatively little is being done to fill it.

[9] A significant aspect of the need for more concern with empirical and behavioral research is that training in research of this kind is highly useful to economists who are to be employed in government and business. One of the frequent criticisms of graduate students who enter these positions is that their interests and experience are not sufficiently oriented toward empirical research.

The Master's Thesis

In Chapter 4, I suggested that graduate students—even those who expect to proceed to the doctorate—should take the master's degree, and I have proposed certain standards for this degree. Among these standards are the following: (1) that each candidate should be prepared in at least one special field in addition to the common core; (2) that he should be able to write correctly and with logical organization brief or fairly extended discourses on subjects in his special field; and (3) that he should be able to carry on limited research projects under general supervision or serve as a useful research assistant. I recommended that each candidate should write a master's thesis or equivalent as preparation for meeting these requirements and as a test of his ability to do so.

This judgment is apparently confirmed by both practice and opinion in many departments of economics. Of 107 universities for which data are available, 86 (84 percent) require a master's thesis or essay of all master's candidates. Usually this thesis is considered to comprise about one-fifth of the total work for the degree. About two-thirds of responding graduate professors indicated that in their judgment all candidates should be required to write a master's thesis or essay.[10] And about three-fourths of these professors reported that they are reasonably satisfied with the functioning of the master's thesis in their departments. When asked if changes in the requirements and practices regarding the master's thesis are anticipated, only 2 of the respondent professors stated that the requirement may be dropped, and 4 more that the requirement may be changed in some respects. When asked what they thought the educational objectives of the master's thesis are, or should be, the respondent professors mentioned the following:

Experience in extended analysis
Experience in writing
Experience in research
Experience in reaching valid conclusions by independent study
Appreciation and understanding of research and scholarship
Acquiring knowledge of a specialized field
Training in research methods
Familiarity with source materials
Testing preparation for work toward the Ph.D.

When the professors were asked if they thought these objectives were being achieved to a reasonable degree, only 2 replied in the negative.

Not only are graduate professors well pleased with the educational

[10] Another 15 percent of the responding professors thought that some but not all candidates should be required to write a thesis (data from schedule IV: 61 respondents).

functioning of the master's thesis, but also a majority of graduate students who have written theses express satisfaction. When asked whether the writing of a master's thesis made an important contribution to their intellectual development, their responses were as follows:

		Present graduate students[11]	*Former graduate students*[12]
Yes		58%	72%
Yes, qualified		25	9
No		17	19
	Total	100	100

It can be argued that the master's thesis is not an essential part of graduate education. The objectives of graduate work in the early years can be achieved in other ways, for example, by seminar papers, papers written in connection with courses, oral reports, etc. There is no substitute, however, for creative, original, and independent work presented in carefully written reports and subjected to the criticism of professors and fellow students. The advantage of the thesis—and it is an overwhelming advantage—is that it has a tradition. It is thought of by both students and professors as a major task in which students are expected to do their very best. The customs of formal announcement of topics, clear and correct presentation, and deposit in a library gives the thesis a special status. It is likely to call forth greater efforts on the part of students and to elicit greater personal attention on the part of professors than other forms of written and oral work. The retention of the thesis is undoubtedly one way to help protect or reinstate the quality of graduate education and the prestige of the master's degree. Another advantage of the master's thesis is that it is usually written in residence where facilities and counsel can be readily available, whereas the doctoral dissertation is frequently written *in absentia*.

The difficulty with the master's thesis—especially in the departments having larger graduate enrollments—is that the burden of faculty supervision becomes very heavy. Hence there are understandable and perhaps unavoidable tendencies to reduce the emphasis on the master's thesis or, if the formal requirement is maintained, to reduce the amount of supervision.

That the problem of supervision is a real one was revealed not only by many conversations with graduate professors and students, but also by the responses of present and former graduate students to the question: "How might the writing of a master's thesis have been made more valuable to you?" Nearly half of the reporting graduate students in

[11] Schedule IX: 140 respondents.

[12] Schedule X: 218 respondents.

residence in 1951-52 (who had written master's theses) indicated some dissatisfaction with the amount or kind of supervision, counsel, discussion, and conferences which had been available to them. And one-third of the former graduate students indicated similar dissatisfaction.

The subject of teaching loads and other demands upon the time of professors will be considered later. At this point, it may be observed that some graduate professors are carrying burdens so heavy as to preclude their giving detailed supervision to master's candidates. For example, some of the most distinguished members of the profession are carrying 6 to 9 hours of classroom teaching and supervising as many as 25 to 30 Ph.D. dissertations at one time. These same men are often in frequent demand for consulting, speaking, and writing. So it is small wonder that the master's candidates are sometimes given hasty consideration. The complaint about inadequate supervision, however, comes partly from students who are working under heavily loaded professors. It comes also from those who are working with professors whose loads, superficially at least, would permit them to give careful attention to their master's students.

The conclusion is inescapable that the kind of close working relationship between professor and student which might yield large educational dividends is lacking in a large percentage of cases. Some departments do not allow time for their professors to give this kind of attention to students, or when the time is given, some professors apparently do not take the responsibility seriously. In my judgment, this is a serious problem. Departments, large and small, should re-examine their educational programs for first-year students to determine whether they are meeting their obligations, or whether they are merely acquiescing in the trend to convert the first graduate year into a fifth undergraduate year.

The Doctoral Dissertation

There is no serious question as to the desirability of retaining the doctoral dissertation as a major requirement for the Ph.D. Almost everyone is agreed that it should be continued in something like its present form. Both professors and former graduate students indicate overwhelming approval of the dissertation as a highly effective educational device.

At most institutions, the educational objective of the doctoral dissertation is to train students in independent research and in the orderly and effective presentation of results. It is also intended to increase the student's knowledge of a specialized field within economics.

In general, the dissertation is regarded as a major task which will occupy at least a full year of the student's time. Most departments adhere, in principle at least, to the traditional concept that the dis-

sertation should be an "important and original contribution to knowledge," though there is widespread skepticism as to whether this standard is or can be actually attained. The sheer size and diversity of the annual list of doctoral dissertations presented each autumn in the *American Economic Review* leads to skepticism as to whether all of these projects will ultimately come to something important and at the same time original. Yet, year after year, there is an amazing variety of interesting work in progress by doctoral candidates, and the net result in terms of the growth of these students, if not in the development of the science, is surely most gratifying. However, there are certain criticisms of present practice, and improvements are possible.

As already indicated, a major criticism is that the topics selected and the methods employed are heavily weighted toward library research conducted wth secondary sources of data by single unassisted research workers. There should be no blanket condemnation of such topics and methods; for many purposes and for many students, "lone-wolf" library research is entirely appropriate. Yet because of the greater ease and the relatively smaller cost of this type of project, there is almost surely a slighting of the type of projects which requires the collection and manipulation of primary data. This raises again the question of the research facilities and environment of the department in which the student functions. In my opinion, many departments would be well advised to encourage the integration of doctoral research into the organized research programs of the department. In other words, it should be possible for dissertations to be written in connection with the work of the "research institute" described above. In this way the student would be able to undertake research of an empirical type under adequate supervision and with essential facilities. Sometimes, but not necessarily, his dissertation could be part of a larger study. In these cases, he would be able to learn not only from his own specific task but also from close association with the work of others. In all cases, however, his work should be clearly identifiable and independent.

This raises the question, frequently faced in agricultural experiment stations and other research organizations, as to whether students should ever be paid for the research they do in connection with their master's theses or doctoral dissertations—or to put it another way, whether students should ever be permitted to present, as a thesis or dissertation, work which they have done in connection with an organized research program and for which they have been paid. The answer to this question is not clear. It raises issues regarding the equitable treatment of those students who do not receive compensation for their research. Discussions with many professors who have had experience in these matters suggests that there is no compelling reason for denying a stu-

dent the privilege of using in his dissertation research work for which he has been paid. There is little difference between this and a scholarship available during the period of preparing a thesis.

I should emphasize again that I am *not* suggesting that all dissertations should be part of organized research programs or that there is no place for the more conventional topics and methods. I am only pointing out that the organized research program provides a splendid way of promoting more empirical work, of making better research facilities available to students, of providing good supervision, and possibly of making available more financial assistance.

But regardless of whether a department has a research institute, I should strongly suggest that the range of research facilities available to doctoral candidates be enlarged to include more than a library. Many worthy doctoral projects require travel, clerical assistance, machine tabulations, field surveys, etc. Departments should have funds which could be made available to students for these purposes, and should encourage more students to undertake the kinds of projects which require these facilities. These things are the counterpart for economics of the laboratories which are so essential in the natural sciences. At present, only a handful of departments have funds available to support the research of doctoral candidates except for those candidates who receive outside grants (e.g., from the Social Science Research Council). Yet an overwhelming majority of professors believe that such aid should be provided. In my opinion this is a most urgent next step in improving the research training of economists.

It is sometimes possible for doctoral candidates to utilize in their dissertations research which they have done when employed in a business, a governmental agency, or a non academic research institution. Sometimes this works out well, though it has the disadvantage of all work *in absentia.* This raises the question of supervision of the doctoral dissertation.

Supervision of Doctoral Dissertations

For many reasons, the principal one being financial, many dissertations are written *in absentia.* Generally, this is an undesirable practice. It often means that the student gets little attention from his advisers, loses the stimulus of working in a university environment, divides his thought and energies between his job and his dissertation, and works without adequate library and other facilities. Moreover, the length of the period over which he is working on his dissertation is greatly extended so that the process becomes a burden, a bore, and a source of frustration. Many dissertations are not completed for this very reason. It is highly desirable in most cases for the dissertation to be completed,

If this is to be done, however, departments must encourage their students to remain during the writing of the dissertation. In many departments there is practically no such encouragement; it is regarded as normal procedure for students to leave when they pass their preliminary or general examinations. I believe that all departments should advise students unmistakably of the advantages of remaining in residence until the dissertation is near completion. Advice, however, may not be enough in view of the financial burdens faced by students. One solution, therefore, is to offer more scholarships or part-time graduate appointments to students who are in the final phase of their graduate work. This raises a difficult issue. Assuming that a department has a given sum for aid to graduate students, shall it be used to finance a larger number of students through the first two graduate years, or shall it be used to finance a smaller number of students through three years? Some institutions have quite consciously chosen the first of these alternatives. In my opinion, this is likely to be the wrong answer. It would be better to be more selective and to provide aid throughout the graduate careers of students.

Even if students receive scholarships or part-time appointments during the period when they are working on dissertations, the temptation to take full-time jobs paying several times the graduate stipends will be strong. So even here the solution requires encouragement or persuasion. Departments should attempt to create the attitude that it is normal for students to stay in residence until the dissertation is virtually complete, and that it is unusual or irregular to attempt to write dissertations *in absentia*. When students find it financially impossible to continue residence after passing the general examinations, they should be encouraged to return for additional residence at a later time.

It does not follow, however, that if the student remains in residence during the writing of his dissertation, he will automatically receive adequate guidance and supervision. One of the most frequent complaints of graduate students is that they get little assistance from their professors, and that they are delayed by the slowness of professors to read and criticize their work or by difficulty in seeing the professors at all except for perfunctory and infrequent visits of short duration. While the complaints are more numerous in the departments with large graduate enrollments and overburdened professors, the complaints are also found in institutions where graduate enrollments are relatively low. When former graduate students were asked how the writing of a doctoral dissertation might have been made more valuable, 60 percent (of 164 who had completed dissertations) responded that more or better supervision, conferences, discussion, etc., would have been help-

should lead departments to reconsider the teaching and other loads of professors on the one hand, and the obligations of professors to students on the other.

It is obvious that guidance and supervision can be overdone. The dissertation is supposed to be a measure of the student's ability to work *independently,* and not of his efficiency in carrying out the suggestions and elaborating on the ideas of his professor. Students vary in the amount of guidance they need. Nevertheless, graduate students, no less than other research workers, need the benefit of frequent criticism, suggestion, and discussion.

Scope and Content of Doctoral Dissertations

A criticism of many dissertations is that they are too long, that they deal with problems that are too comprehensive, and that they tend to become syntheses of other economists' ideas rather than reports of original research. I think there is little doubt that too much attention has been given to length; a tradition has developed that a dissertation in economics must be a sizeable tome. There is merit in current tendencies to permit students to present dissertations of article length, provided the quality and extent of work involved is up to standard and provided adequate documentation and description of methodology are presented. Length should be a function of subject and not an end in itself. Indeed the goal of originality would be more frequently attained if students did not feel a compulsion to produce a lengthy document.[13]

It is sometimes argued that the education of the student—especially his preparation for college teaching—will be advanced more fully if he writes a lengthy synthetic dissertation covering some broad subject than if he conducts research on a narrow topic and presents his results in the form of a research report. This raises a very fundamental issue. My own view is that the educational merit of a specific subject on which the student attempts to do original research is greater than that of a broad subject on which the student attempts to write a book. If the specific research is adequately done, the student will be required to understand the broad field of which it is a part just as thoroughly as though he had written a book on it. In addition, by pursuing the specific subject, he learns about the methods and nature of research. This he

[13] A critic writes: "The dissertation requirement—as it has been enforced—has contributed to lowering the standards of research in economics. The frequent insistence on length plus the burden on professors resulting from too many dissertations to supervise has led to low standards of quality. Sloppy work is accepted. The student regards this as evidence that this is an acceptable standard of quality in general, and proceeds to use it in future work. He leaves his graduate work with no real standards of workmanship. The dissertation requirement—properly enforced—could make a major contribution to raising standards of research. For this purpose, it is absolutely essential that emphasis be shifted from quantity to quality."

may never learn merely by reading and rearranging the writings of others. In these comments, I do not mean to generalize for all students or to insist that all dissertations should follow a particular rigid pattern. Yet I find difficulty in accepting the view that research on a specific and limited problem is narrowing in terms either of breadth of personality or breadth of knowledge. It can be so regarded only if it is assumed that the doctoral dissertation is to be the student's final creative effort. This is precisely what we should strive to avoid. His dissertation should represent one research effort made in the expectation that there are others to follow.

A special aspect of the scope or comprehensiveness of dissertation topics relates to the premium which the labor market for economists places upon the Ph.D. A student who elects a difficult or extensive topic requiring a long time to complete is placed at a disadvantage as compared with one who elects a fairly easy or restricted topic. Other things equal, the latter will receive his degree earlier and will move up the academic or other professional ladder sooner. By the same token, a student who does a careful and thorough job is placed at a disadvantage—at least in the short run—as compared with one who does the sloppiest acceptable job. Students therefore acquire the attitude that the dissertation is something "to try to get over with" as soon as possible. Many have expressed this attitude to me quite bluntly.

I am not sure that there is any solution to this problem except the one of maintaining adequate minimal standards. Surely there is little hope of establishing a nice equality in the amount of work involved in all dissertation topics. One suggestion has been made, namely, that the degree be awarded after a student has made significant *progress* (adequately reported) on a major subject comparable to that required for *completion* of a minor topic.

Publication of Doctoral Dissertations

I have already indicated in Chapter 4 certain doubts about the practicability of mandatory publication.[14] Yet it must be admitted that publication may serve two useful purposes: (1) it may help to maintain standards, since both professors and students will be more meticulous regarding a document that is to be published than one which is to be limited to typescript and buried in a library; (2) it may help to disseminate the results of doctoral research.[15]

As a compromise solution to the publication problem, would it be possible to publish abstracts—perhaps up to 25 pages in length—of

[14] See pp. 48-50.

[15] Microfilming has helped on this, though it is not yet a full solution.

Chapter 10

TEACHER TRAINING

A wholesome development in the field of graduate education is the increasing concern for the preparation of men and women for college teaching. Deans of graduate schools and others engaged in education at the graduate level are asking themselves whether conventional graduate education, with its emphasis on specialized "research," is well-suited to the preparation of college teachers. Since a substantial portion of their students become college teachers (in some fields the great majority enter college teaching),[1] the question quite naturally arises as to whether a program of training oriented toward research is really suitable for persons whose professional lives will be spent as teachers. The question becomes especially pertinent in view of the fact that the Ph.D. has become a union card for college teachers, and is therefore sought by thousands of persons who have no intention of devoting their lives to research.

The problem is also significant for departments of economics. It is true that many graduate students of economics ultimately serve in government, business, and private research organizations; yet a large number of them enter college teaching. A Committee of the American Economics Association on the Teaching of Undergraduate Economics considered the question of the training of teachers, but decided that a comprehensive study of this subject "would have to concern itself with the complicated business of our graduate schools, and would necessarily be coextensive with the whole subject of graduate instruction in economics."[2] Accordingly, in its report of December 1949, this group recommended that "a committee be appointed to study and report on graduate training in economics, the report to consider both the development of scholarly techniques and the development of competent teachers." The present study is a result of that recommendation.

Issues and Points of View

In chapter 3, I suggested the following minimal standards regarding teaching ability: (1) at the time of receiving his master's degree, a student should be able to teach, under supervision and with time for preparation, the first undergraduate course in principles of economics;

[1] See p. 10.

[2] Horace Taylor (editor), *The Teaching of Undergraduate Economics, American Economic Review* (supplement), Dec. 1950, p. x.

(2) at the completion of the Ph.D., the candidate should be prepared to teach, at a level of proficiency acceptable in a leading university or college, principles of economics, the first undergraduate course in his special field, and (given time for preparation) intermediate economic theory. These standards were intended to apply to all students whether or not they expected to enter college teaching. They were proposed on the ground that a candidate who would be unable to meet these standards would be handicapped not only as a teacher but also in other jobs within the profession. These other jobs also require basic knowledge of economics and the ability to impart it to others. Almost all economists are in some sense teachers. Thus it is entirely appropriate that practically all should be expected to have some competence as teachers, just as all should be expected to have some competence in research. According to this view, about the same type of training is suitable for all graduate students in economics regardless of their career objectives. Those who expect to enter teaching should be trained in research and those who expect to engage in research should achieve a certain competence in teaching.

There are many who take issue, in varying degrees, with this position. At the extreme are those who believe that the type of education suitable for college teachers is markedly different from that suitable for research workers, and that the orientation of graduate education toward research detracts seriously from its usefulness in the training of teachers. It is held that this is particularly serious because most students —at least those at the Ph.D. level—do in fact enter college teaching. The main criticism levelled against present practice is that preoccupation with research, especially the writing of a dissertation on a restricted topic, is narrowing. It involves, it is said, the learning of more and more about less and less, whereas the need of prospective teachers is breadth of knowledge and ability to organize, synthesize, and criticize a wide range of ideas. This position has been expressed persuasively and in detail by Howard Mumford Jones in his book, *Education and World Tragedy*,[3] in which he proposes drastic reorganization of the conventional graduate college into two units, one an institute of research for the training of research workers and the other a graduate college for the training of teachers. Others, while favoring no such drastic solution,

[3] Cambridge, 1946. For discussion of various aspects of this issue, see also T. C. Blegen and R. M. Cooper (editors), *The Preparation of College Teachers*, American Council on Education, July 1950; President's Commission on Higher Education, *Higher Education for American Democracy*, Vol. I, pp. 84-91 and Vol. IV, pp. 1-26, Washington, U. S. Government Printing Office, 1946; W. S. Gray, "Preparation and In-service Training of College Teachers," *Proceedings of Institute for Administrative Officers of Higher Education*, Vol. 10, 1938; Ruth E. Eckert, *The Preparation of College Teachers*, National Education Association, 1948; Fred J. Kelly, *Toward Better College Teaching*, Washington, U. S. Government Printing office, 1950.

propose increasing attention to the objective of training college teachers which, they feel, is not now being satisfactorily achieved. One of the most forceful expositions of this middle position is a report of a University of Chicago group: "A Statement of Policy and Plans Prepared by the Committee on the Preparation of Teachers."[4]

According to the Chicago report, the role of the college teacher includes five functions: (1) to participate in formulating the educational ends and the curricular structure of his institution, (2) to guide and encourage students in learning something of the nature and use of the essential knowledge and characteristic methods of his teaching field, (3) to engage in research and other types of creative activity, (4) to serve as counselor of students, and (5) to participate as a citizen and especially to assist in interpreting to the community his institution and higher education generally. The substantive training of a college teacher should include a well-balanced general education in the arts and sciences, a command of the broader division of knowledge within which his field of concentration lies, and acquaintance with the full range of basic research methods used in his field.

The Chicago report states that "the college teacher must be essentially an interpreter rather than creator of knowledge. . . . Yet the *interpretation* of knowledge should not be confused with the mere *transmission* of knowledge. . . . The best interpretation and hence the best teaching will seek to bring about the active reconstructing, by both teacher and student, of the processes whereby some present outcome was achieved in the past and further knowledge may be gained in the future. It follows that the interpretations of the college teacher will be most precise and authentic if, as graduate student, he himself made a contribution to understanding and if, as teacher, he remains capable of making further contributions to it. Therefore . . . the college teacher should have training in research of such a character as to give him the experience of making a contribution to understanding. However, because much of the research which has been done by graduate students has been trivial, repetitive, and unilluminating, the Committee further believes that the research training of a prospective teacher should be acquired whenever feasible in connection with a problem of such scope and significance as will lead him to employ a considerable variety of the principles, materials, and techniques of his eventual teaching field."[5] The Chicago report offers two proposals: (1) a seminar in college teaching, and (2) apprentice training, after the completion of the dissertation, at stipends equal to the salaries students might have

[4] Mimeographed, June 14, 1948. Dean F. C. Ward was chairman of the Committee and Professor H. A. Anderson its executive secretary.

[5] Ibid. pp. 10-11.

obtained as instructors elsewhere. The committee is critical of most present part-time teaching assistantships because the student gets little training or supervision and because teaching tends to be a secondary interest during the period of his graduate study.

The main concern for greater attention to the training of college teachers has been expressed not only in words but also in actions. Several universities have established seminars or courses in techniques of college teaching; some have attempted to give close supervision and guidance to teaching assistants; several (notably Harvard and Syracuse) have instituted new doctoral programs in "social science" intended especially for prospective teachers; other universities while retaining the form of the traditional Ph.D., have in fact changed the orientation from research to teacher training; others, while retaining the conventional Ph.D., have undertaken to provide short courses and other educational experiences for college teachers who are already on the job.[6] Several conferences on the subject of training college teachers have been held, and the American Council on Education has evidenced active interest in the subject.

Though a considerable number of educators have criticized the traditional graduate program on the ground that it is not entirely suited to the needs of the prospective college teacher and though many proposals for reform have been made and some acted upon, yet my impression is that a great majority of those concerned with graduate education do not favor substantial departure from conventional practice.

The Association of American Universities in 1948 expressed itself forcibly in favor of retaining the traditional Ph.D. when it adopted a report stating: "We re-affirm our belief that the essential requirements for the Ph.D. degree as they are now in force at the member institutions are in general fundamentally sound. The Ph.D. degree is granted to those students who (1) have mastered a definite field of knowledge so that they are familiar not only with what has been done in the field but as well with its potentialities and opportunities for further advances, (2) have demonstrated capacity to do original and independent scholarly investigations in the field, and (3) have ability to integrate their field of specialization with the larger domains of knowledge and understanding. The training for the Ph.D. degree involves the demonstration that difficult problems can be solved through properly conducted research. . . . Much of the criticism of the present programs for the Ph.D degree has come from those who contend that most of the individuals who receive the degree become college teachers and that the

[6] Cf. Report of the Committee on Graduate Work, "Results Obtained from a Questionnaire Study on the Training of College Teachers," Association of American Universities, *Journal of Proceedings and Addresses*, 1948.

training which they receive is unsuitable for the college teacher. Some of the criticism is based upon superficial examination of the facts and upon failure to recognize the complexities of some of the problems. The thesis that long preoccupation with special knowledge serves to make a man unfit to explain the elementary matters in his own field has yet to be proved nor does the likelihood that this is true appeal to common sense. Teaching is actually an art, the successful practice of which depends on qualifications in addition to knowledge such as a pleasing manner, a good voice, an aptitude for dealing with people, a skill in simple exposition and an ability to distinguish an important point from a detail. However, the training which has shown an individual the danger of easy generalization in one area of scholarship should serve to guide him in all generalization and so make him a safer guide in the classroom.... It must be emphasized that a finished college teacher cannot be produced even by the best program a graduate school might develop. Excellent teaching comes only with experience and continual self-improvement which the individual as well as the institution employing the teacher must recognize. . . . The experience gained in selecting and carrying out a piece of research has inestimable value for the student preparing for an intellectual career, whether as a research scientist, a worker in the social field, or as a college teacher."[7]

Views of Economists

From my inquiries among graduate professors of economics I have concluded that a great majority would agree with the view expressed in the above quotation. When asked: "Do you feel that you have any responsibility to train your doctoral students in the art of teaching?," 55 percent replied in the negative, indicating that the only training should be by example and by general training in written and oral presentation. Another 40 percent thought that their responsibility for teacher training included only the provision of teaching assistantships and informal aid to these assistants. Apparently no one favored formal instruction in pedagogy as part of the doctoral program.[8] From verbal conversations on this point, it was evident that many professors view with horror the possibility that courses in "education" might be given to doctoral candidates. They are adamant in the opinion that if any instruction in pedagogy is to be given it should be done by economics departments, or perhaps by social science divisions, and not by

[7] Report of the Committee on Graduate Work, "The Significance of and Proper Training for the Degree of Doctor of Philosophy," Association of American Universities, *Journal of Proceedings and Addresses*, 1948.

[8] Schedule VII: 59 respondents.

departments of education. On the question of whether the programs of prospective college teachers and prospective research workers should become separate and distinct, the response was an equally clear-cut negative. Only one respondent thought this a good idea, three gave qualified approval, and all the rest were opposed.

Heads of departments of economics in those institutions of higher education which do *not* give graduate work, however, expressed somewhat different views. They were asked: "What is your reaction to the frequent proposal that graduate study should be oriented more largely toward preparation of teachers rather than toward the training of research scholars?" Only 22 percent responded negatively, some of these indicating that training for teaching is secondary to other aspects of graduate education or that there is no conflict between the objectives of training for teaching and for research; 32 percent thought that more emphasis should be given to teacher training, though many of these felt that there was no necessary incompatibility between the two objectives; the remaining 46 percent responded favorably in a way that would indicate support for a considerable increase in the attention given to teacher training, some of these suggesting that the emphasis on research has been greatly overdone.[9]

To summarize, professors in *graduate* departments of economics are overwhelmingly unsympathetic to the idea that the Ph.D. program should be modified substantially in the direction of greater attention to teacher training. On the other hand, many of the heads of *undergraduate* economics departments, which are the principal academic employers of economists, feel that more attention might be given to the training of college teachers.

Some Proposals

My own views of this disputed subject are about in the middle of the various opinions now current. I feel that the essential orientation of the Ph.D. toward research is sound—whether the training is intended for prospective teachers or prospective research workers. As repeatedly suggested in this report, the qualities required for successful teaching are by no means wholly different from those required for effective functioning in other positions which economists are called upon to fill. Knowledge of the subject, scholarly competence, and ability to convey economic ideas are indispensable in virtually all professional work in economics. Nevertheless, just as I believe that many departments of economics should improve their research training, so I think that many should improve their teacher training. I believe this latter could be done without

[9] Schedule XI: 89 respondents.

detracting significantly from the research training and without elaborate reorientation or reorganization of graduate instruction.

In most departments, teacher training occurs in three ways: (1) students observe the teaching of the professors from whom they take courses, (2) students gain experience in oral presentation and discussion, and (3) students are employed as teaching assistants. Improvement is possible in all three of these respects, and certain additional methods are feasible and worth trying.

First, it goes without saying that if students are to learn from the example of their graduate professors, the level of teaching in courses attended by graduate students should be good. Anyone familiar with graduate instruction will concede that improvement is sometimes possible here.

Second, it would surely be desirable to require or encourage students to gain more experience in oral presentation and in discussion. This can be accomplished both within and outside the classroom. I have gained the impression that at many institutions student participation within the classroom and in conferences with faculty members is less than would be desirable. I have also felt that the atmosphere and the traditions of some departments are not congenial to the kind of free informal discussion among graduate students which can be a most fruitful educational experience. Positive steps could be taken toward improvement.

Third, much can be done to transform the work of teaching assistants into a genuine apprenticeship in which the student progresses from less to more responsible functions and throughout which he receives guidance, assistance, and helpful criticism from staff members. Practice in this respect varies greatly among institutions. At the one extreme are the institutions which use no teaching assistants; at the other extreme are those which use assistants extensively but with a minimum of instruction or guidance.

Teaching Assistantships

A fairly persuasive case can be made for the employment of graduate students as teaching assistants. This practice can be defended on grounds of institutional efficiency and of effective graduate education. Graduate students, if properly selected and supervised, can serve usefully in the teaching of undergraduates. The cost of this service can be low—especially when it is considered that the same expenditure provides an alternative to scholarships for graduate students. At the same time, by serving as teaching assistants, graduate students can learn a great deal about economics.

It is true that the system of employing graduate assistants is often

abused. In some institutions, so much of the undergraduate load is carried by inexperienced assistants that undergraduates seldom have contact with mature and experienced professors. In some institutions the assistants are not given adequate guidance and assistance, and are thrust without adequate preparation into responsible and largely unsupervised teaching. Educational atrocities are sometimes committed through careless use of teaching assistants. But the system is not inherently bad if not abused.

The following is an outline of a scheme for using graduate assistants which I believe can be defended on educational grounds—from the point of view both of training college teachers and of providing good undergraduate instruction. The scheme is based on two fundamental principles: (1) that the undergraduate offerings should be arranged so that a major part of the work of each undergraduate student would be under mature full-time staff members, and (2) that no graduate student would be placed in responsible teaching without considerable prior experience under supervision.

Under this scheme, a graduate assistant would begin as an apprentice to a full-time staff member. His duties would be to assist in the preparation of examinations, problems, and teaching materials; to help with clerical work; to conduct classes occasionally—sometimes in the absence of the professor but sometimes also in his presence; to observe the teaching methods of the professor by attending classes regularly. As a result of this relationship, the professor could determine when the student would be ready for more responsible teaching. When this point had arrived, the student might be transferred to a large elementary course of multiple sections. Here he would serve again under the direction of the professor in charge. Through frequent conferences he would participate in the planning and conduct of the course, and would have opportunity to discuss methods of presentation and teaching problems.[10] If the graduate assistant succeeds in this teaching under supervision, he is then ready to be recommended for greater responsibility and independence.[11]

[10] His classes might be visited by the professor-in-charge, possibly by other professors, and also by his contemporaries. In my opinion, the inhibition in American higher education against the visitation of classes to observe teaching is unfortunate. Every teacher could afford to learn from his colleagues and superiors about the weaknesses and strengths of his own teaching techniques. Yet teachers are shut off from this source of criticism by the taboo that such visitation is a violation of privacy. However, there is considerable difference of opinion on this point.

[11] A special problem exists in those institutions which are so located that many of their graduate students serve as part-time teachers in nearby colleges. This is especially true of institutions located in large cities. It is possible that some kind of formal cooperative relation between the graduate department and the employing colleges would be helpful. There are obvious difficulties in this, but it would offer distinct advantages to all concerned if the administrative details could be mastered.

The educational values of teaching assistantships are sufficient to warrant giving this experience to as many students as can be done without seriously impairing the quality of undergraduate instruction. Some universities are trying to give every doctoral candidate some teaching experience; this policy has much to commend it. In the preceding chapter it was pointed out that *research* assistantships are also commendable. Of course, the question arises as to whether students should have *both* research and teaching experience during their graduate careers. I am inclined to answer affirmatively, though I recognize the difficulties and the probability that this would lengthen the period of graduate study for many students. I have serious doubts as to whether it is desirable for a graduate student to proceed through his entire graduate career without some practical experience in teaching and/or research. Therefore, I have doubt as to the wisdom, in many cases, of granting scholarships for which no services are required—except during the period when the student is engaged in writing a dissertation.

Seminar in College Teaching

Along with this apprenticeship scheme, a seminar might be offered on college teaching generally or specifically on the teaching of economics. The purpose of such a seminar might be to acquaint the student with educational objectives, teaching methods, curricular problems, student guidance, responsibilities of faculty members, etc. Such a seminar would be, not a substitute for other work, but an addition. This is the same as saying that it should carry no credit. It might be provided as a service to those students who wish to prepare specifically for teaching, or it might be required of those students who are serving as teaching assistants. On the question of whether the seminar should be given by the department of economics, by a division of social sciences, or by the graduate college, I do not have strong views. Generally, I should prefer that it be given by the department. Such a seminar might, over a period of time, contribute significantly to pedagogy and exert a constructive influence upon quality of economic teaching and upon the character of courses in the field.

My recommendation of the seminar in the teaching of economics at the college level is based partly on the belief that we know little, systematically, about pedagogy in economics at the college level. So far as I can learn, we are vague about the objectives of college courses in economics. We have little reliable information about content, methods of instruction, or personal qualities of teachers as related to the attainment of whatever objectives may be decided upon. I should hope that if a few active and continuing seminars in the college teaching of eco-

interested in the subject, results of importance to the whole profession might be achieved.

In-service Training

A major issue in the training of college teachers concerns the division of responsibility between the graduate departments in which students are trained and the institutions which later employ them as teachers. Opinion on this question is apparently divided. Some believe that virtually the entire responsibility should be assumed by the graduate departments, and that students who receive the Ph.D. should be finished teachers ready to take on a variety of courses independently and without further guidance. Others believe that graduate departments should assume no responsibility beyond training students in subject matter and research technique, and that it is up to employing institutions to induct them into the job of college teaching in all of its aspects. Others, among them myself, feel that there should be a division of responsibility—that it is unreasonable to expect the new Ph.D. to be a fully-trained and seasoned teacher, yet that he should have had the kind of experiences which would enable him to develop rapidly into a successful teacher (at least within the limits of his talents). At the same time, the employing institution should provide in-service training and supervision which would lead him to recognize and overcome weaknesses and bring out his potentialities. This viewpoint was reported by a majority of the heads of economics departments (in institutions not offering graduate work). The comments of these department heads were as follows (in the order of frequency):

Employing institutions should provide orientation and inservice training programs to clarify objectives and general policies, to help young teachers to grow, and to assist with problems.

Graduate departments should acquaint students with content, method, and philosophy.

Graduate departments should give more attention to teacher training.

Graduate departments should provide supervised teaching experience.

Employing institutions—especially small ones—are not qualified and have no facilities for teacher training.

Graduate departments should turn out competent teachers.

Graduate schools should appraise their candidates more carefully and be more scrupulous in their recommendations.

Employing institutions should give financial aid to young teachers who are trying to complete doctorates.

Teachers are born, not made.

Teachers are self-trained.

Employing institutions have difficulty with in-service training because of the tradition against class visitation or supervision.

Teacher-training "courses" should be resisted—especially if they are to be given by departments of education.

The provision of in-service training for young college teachers is a delicate task requiring a good deal of tact and friendly interest. It can be accomplished most easily and naturally if the new teacher begins his work in a course having multiple sections supervised by a mature professor who is interested in developing good teachers. Another device that may be useful in some institutions would be a seminar or discussion group on teaching problems to be attended by young teachers and led by a mature professor vitally interested in the subject. Orientation literature may be developed. An outstanding example of this is a pamphlet *You and Your Students,* which has been published for its staff by the Massachusetts Institute of Technology.[12] Still another possibility is regional meetings or short courses on teaching problems. These might be conducted by universities to serve the teachers of their areas. The usual professional meetings, while sometimes including discussions of educational problems, do not fully meet this need.

Conclusion

I should reiterate that the kind of approach to the problem of teacher training which I am suggesting does not involve significant reorientation of the Ph.D. program. I believe, and I think most economists concur, that the Ph.D. should continue to be oriented primarily toward research and scholarship in economics. This is the most important aspect of the training of *economists* regardless of their career objectives. In the long run, the best teachers will be produced by this method rather than by a program more specifically related to teacher training. In particular, I would reject the view that prospective teachers should write a kind of doctoral dissertation different from that selected by prospective research scholars.

In my opinion, the view that research-oriented dissertations are undesirable for prospective teachers is based on confusion as to the meaning of "narrowness" or "breadth." A research topic may be limited in scope, indeed it usually must be so limited, but that does not necessarily mean that work on that topic will have a "narrowing" influence on the student. If the topic is a significant one, the student will be required to know how it fits into the broader body of knowledge to which it is related. In working on it, he will be required to familiarize himself with a wide range of relevant literature and sources, he will become acquainted with the tools and methods of research, he will discover cognate problems for further research, and he will gain a "feeling" for

[12] This pamphlet was prepared by a faculty committee under the chairmanship of Professor R. D. Evans.

the process by which research is conducted. These are broadening, not narrowing, experiences, even though the subject itself is specific and limited.

It is true some research topics, even important ones, may not be suitable for doctoral dissertations because they may not have sufficient educational potentialities. But merely because some research topics are unsuitable should not justify condemning all research as "narrowing."

There is also another confusion. Those who regard dissertations based on research as "narrowing" tacitly assume that the doctorate represents the termination of the educational process, and that the dissertation will be the final intellectual effort of the student. Unfortunately this is so in many cases; yet, the entire graduate program can hardly be organized on the assumption that this will be so. The doctoral dissertation is intended to be but one of many studies to be conducted during a long lifetime of intellectual endeavor. It is intended to prepare and encourage students for future scholarly work. To say that this one first effort is narrowing is to overlook the fact that it is intended to be but one small part of the student's total intellectual life.

Chapter 11

TIME SPAN OF GRADUATE STUDY

This chapter is concerned with the length of time involved in the education of economists. Data are presented on the periods of study prescribed for advanced degrees in economics, and on the amount of time students actually spend in meeting the requirements for these degrees.

Credit Requirements

In most institutions, the minimal requirements for the master's degree in economics are stated in terms of a number of credit hours which might be earned by a student in one academic year of resident study. In universities on a semester basis, the number is usually around 24 hours plus a thesis or, if credit is given for the thesis, around 30 hours.[1] Many institutions require that at least a certain major fraction of these hours must be taken in economics. Most require also that the student achieve at least a certain minimal grade average (usually "B") or that only a limited amount of credit will be counted for any course in which the grade is lower than "B."

Similarly, the Ph.D. in economics is usually defined in terms of a course of study which can be completed in two academic years (including the year of study for the master's degree) plus a dissertation. The dissertation is thought of as the equivalent of one year's work; hence, the entire program for the Ph.D. is formally regarded as a three-year course. In some institutions, the requirement for the Ph.D. is stated in terms of a certain number of credit hours or courses, passed with at least minimal grades (usually "B") and a dissertation. In others, there is no formal requirement except the passing of comprehensive examinations and the completion of the dissertation. Even in these institutions, however, the program is conceived as a three-year course.

There is little criticism of these formal requirements for the master's degree and the Ph.D., and little disposition toward change—though a few professors think that some of their colleagues are a bit lax in their standards for grading graduate students.

Residence Requirements

Most institutions do not require students to be in residence during the entire period when they are earning the credits and writing the theses

[1] In institutions on a quarter system, the number of hours is adjusted accordingly.

demanded for the advanced degrees.[2] In practically all institutions, the minimal residence requirement for the master's degree is one academic year. Once this requirement is met, many permit the student to write his thesis *in absentia,* and some permit him to take limited amounts of extension or correspondence courses or to engage in independent study for credit while not in residence. Residence requirements for the Ph.D. are less standardized. Most institutions require two or three years. A few permit students to obtain credit for independent study *in absentia,* and all allow the dissertation to be written *in absentia,* once the residence requirements are met. There is apparently little criticism of existing *formal* residence requirements (except for provision about work *in absentia*) and no significant effort is being made to change them.

The important issues regarding residence relate not to the formal requirements, which are generally accepted as reasonable, but to the amount of time which candidates actually spend in earning advanced degrees in economics. This subject will be considered in the remainder of this chapter.

Actual Residence

Table 34 shows the percentage distribution of respondent graduate students in economics by length of period of residence between selected points in their graduate careers. The table also shows the mean and median periods of residence. According to these figures, there is considerable dispersion in length of residence. For the master's degree, residence varied from less than one year to 4 years, and for the Ph.D. from 2 to 5 or more years. The great majority of master's degrees were received, however, after one or two years of residence (column 1); the majority of preliminary exams were passed after two or three years of residence (column 4); and the majority of Ph.D's were received after three or four years of residence. As indicated in the table, the mean period of residence prior to the master's degree was 1.5 years, prior to the preliminary examination 2.5 to 2.9 years, and prior to the Ph.D. 3.7 years.[3]

The formal residence requirements of most institutions would call

[2] I did not explore the complicated question of the treatment of students who transfer from one institution to another. Hence, the discussion of residence refers to those students who do all their graduate work at one institution.

[3] A study of the actual periods of residence of graduate students who received the Ph.D. from the University of Minnesota indicated that those who received Ph.D.'s in economics during the pre-war years 1936-37 to 1940-41 had been in residence at Minnesota on the average for 13 quarters, and that those receiving degrees during 1941-42 to 1947-48 had been in residence on the average 14 quarters. Figures for other fields indicated that this average was about typical for all the departments of the University. University of Minnesota, Graduate School, *Graduate Faculty News Letter,* Dec. 9, 1949 (Mimeographed).

TABLE 34.—RESIDENCE OF GRADUATE STUDENTS BETWEEN SELECTED POINTS IN GRADUATE CAREERS[a]

Approximate number of years in actual residence	Bachelor's to master's	Master's to preliminary examination	Preliminary to Ph.D.	Bachelor's to preliminary	Bachelor's to Ph.D.
Former Graduate students who received advanced degrees in 1939–40 and 1949–50[b]					
Less than ½	—	25%	37%	—	—
½	2%	3	2	—	—
1	52	23	34	6%	—
1½	5	4	5	1	—
2	35	30	16	34	11%
2½	2	1	1	8	6
3	4	9	3	27	34
4	—	2	2	17	28
5 or more	—	3	0	7	21
Total	100	100	100	100	100
Mean	1.5 years	1.5 years	0.9 year	2.9 years	3.7 years
Graduate students in residence 1951–52[c]					
Less than ½	—	28%		—	
½	4%	11		2%	
1	42	15		—	
1½	10	29		23	
2	36	13		26	
2½	6	2		15	
3	1	2		19	
4	1	—		13	
5 or more	—	—		2	
Total	100	100		100	
Mean	1.5 years	1.0 year		2.5 years	

[a] These data were derived from responses to a request for "dates in residence." The data presented are approximate because many respondents did not make clear whether they had attended summer sessions or whether they had been in residence during the whole of any specified academic year. A "year" should be interpreted, therefore, loosely as one academic year or as one academic year plus one summer. No differentiation was made between full-time residence and residence during which the student carried less than a full-time load.

[b] Schedule X: 218 respondents. Comparison of data for the 1939–40 group and the 1949–50 group revealed no significant differences.

[c] Schedule IX: 140 respondents.

for one year prior to the master's degree and two or three years prior to the Ph.D. Evidently, then, actual residence is significantly longer than the requirement. This is accounted for in part by the fact that many students are engaged in part-time work during their residence, but it is also due to the inability of many students to prepare themselves in the minimal allotted time.

Most graduate professors apparently are well-satisfied with the actual periods which their students spend in residence—despite the fact that it is typically longer than the minimal requirements. When asked to express their opinions on the amount of time candidates typically spend in residence (as distinct from formal residence requirements), their replies were as follows:

	Master's candidates[4]	*Ph.D. candidates*[5]
too long	10%	14%
too short	2	12
about right	77	63
uncertain	6	10
no answer	5	1
Total	100	100

In commenting on this subject, several respondents indicated that the residence of doctoral candidates is too short in that too many dissertations are prepared *in absentia.*

Elapsed Time

A subject on which there is somewhat greater concern, and in my opinion should be even more concern, is the amount of time that elapses between the beginning and the completion of graduate work. Table 35 presents data on this subject for respondent graduate students, of whom some were in residence in 1951-52 and others received degrees earlier. "Elapsed time" is defined as the length of time between two points in the student's academic career. During part of this time he may not have been engaged in graduate study at all, or he may have been studying only on a part-time basis. Therefore, "elapsed time" is not a measure of the time actually spent in climbing from one point to another on the ladder, but the interval that occurs between these points for whatever reason. Elapsed time is significant in that it indicates the amount of delay, lost motion, uncertainty about career objectives, etc., which, together with the time actually spent in study, determines the age at which candidates reach various points on the ladder. As shown in table 35, the range of elapsed time between each of the successive points is surprisingly great. A substantial minority of students pass from one step to another in about the time theoretically required, namely, one year from bachelor's to master's, one year from master's to preliminary, and one year from preliminary to Ph.D. But there are few students who go the entire distance from bachelor's to Ph.D. in the theoretical three years. A majority take 10 years or more.

[4] Schedule IV: 61 respondents.

[5] Schedule VII: 59 respondents.

TABLE 35.—ELAPSED TIME BETWEEN SELECTED POINTS IN GRADUATE CAREERS

Approximate number of years of time interval	Bachelor's to master's	Master's to preliminary examination	Preliminary to Ph.D.	Bachelor's to preliminary	Bachelor's to Ph.D.
Former graduate students who received advanced degrees in 1939–40 and 1949–50[a]					
Less than 1	1%	27%	7%	—	—
1	29	19	22	3%	—
1½	2	3	1	—	—
2	29	11	28	15	1%
2½	1	—	2	2	—
3	8	5	17	13	3
4	6	3	5	8	9
5	4	3	3	4	5
6–7	7	9	4	13	11
8–9	7	12	7	13	16
10–13	6	8	4	20	34
14 or more	—	—	—	9	21
Total	100	100	100	100	100
Mean	3.3 years	3.6 years	3.2 years	7.2 years	10.0 years
Graduate students in residence 1951–52[b]					
Less than 1	1%	30%			
1	30	14			
1½	5	14			
2	21	19			
2½	4	2			
3	11	5			
4	4	2			
5	3	—			
6–7	5	2			
8–9	8	2			
10–13	8	10			
14 or more	—	—			
Total	100	100			
Mean	3.5 years	2.4 years			

[a] Schedule X: 218 respondents.
[b] Schedule IX: 140 respondents.

The same phenomenon is also illustrated by data on the ages at which graduate students reach each point on the ladder. These are shown in table 36. The average age at the time of receiving the master's degree was about 27 years, and the average age at receipt of the Ph.D. about 32 years.

These figures on both elapsed time and age are confirmed by other

studies. A University of Minnesota study[6] indicated that the elapsed time between the bachelor's and the Ph.D. for economics students at that institution was about 8 or 9 years and the average age at time of receiving the Ph.D. about 33 or 34 years. These figures were somewhat higher than the average for students in other fields. A study of economics students at Columbia University[7] revealed the following average intervals of elapsed time:

A.B. to M.A.	3.0 years
A.B. to Orals	5.8
A.B. to Ph.D.	10.6
M.A. to Orals	2.8
M.A. to Ph.D.	7.8
Orals to Ph.D.	4.1

TABLE 36.—AGE AT SELECTED POINTS IN GRADUATE CAREERS

	Age of former graduate students who received advanced degrees in 1939–40 or 1949–50[a]			Age of graduate students in residence 1951–52[b]	
	At bachelor's	At master's	At Ph.D.	At bachelor's	At master's
20 or less	7%	—	—	9%	—
21	26	1%	—	18	—
22	28	7	—	20	7%
23	8	16	—	13	5
24	10	13	1%	7	15
25–26	12	21	9	16	28
27–29	6	24	19	8	23
30–34	3	13	38	9	10
35 or over	—	5	33	—	12
Total	100	100	100	100	100
Mean[c]	23.0 years	26.6 years	31.9 years	24.0 years	27.4 years

[a] Schedule X: 218 respondents.
[b] Schedule IX: 140 respondents.
[c] The average increase in age between various points does not agree precisely with elapsed time as shown in table 35 because of difficulties of interpreting data on elapsed time. The data on ages are more reliable.

A tabulation by Dr. Lewis A. Froman covering the period 1929-1940 indicated that the average elapsed time between bachelor's and master's varied for the several years from 2.3 to 3.0 years; between master's and doctor's from 4.2 to 5.5 years; and between bachelor's

[6] *Graduate Faculty New Letter, op. cit.*

[7] J. W. Angell, *Occupations and Salaries of Former Graduate Students* (mimeographed), June 20, 1951. This study covered students who received degrees during the period 1931-1950. The averages do not include a few extreme cases.

and doctor's from 8.4 to 9.9 years.[8] Professor George J. Stigler has presented data on elapsed time between the B.A. and Ph.D. for students in various fields at Columbia and Harvard covering selected years between 1900 an 1940. These figures indicate an average interval in 1940 of about 9 years at Harvard and 13 years at Columbia for students in the social sciences.[9]

Although World War II undoubtedly had an influence in lengthening the average elapsed time, the effect was apparently not pronounced. Factors causing delay were compensated in part by the veteran's benefits which encourage early completion of graduate work. Aside from certain irregularities caused by the war, there has been no pronounced trend in the average elapsed time—at least since 1930. Professor Stigler's data indicate, however, that the average interval between B.A. and Ph.D. at the two institutions he studied was considerably less before World War I than since.

TABLE 37.—SUMMARY OF DATA ON RESIDENCE AND ELAPSED TIME (arithmetic means expressed in years)[a]

	Theoretical time	Actual residence	Elapsed time	Age at completion of step
From bachelor's to master's	1			
Former graduate students		1.5	3.3	26.6
Graduate students in residence 1951–52		1.5	3.5	27.4
From master's to preliminary	1			
Former graduate students		1.5	3.6	
Graduate students in residence 1951–52		1.0	2.4	
From preliminary to Ph.D.	1			
Former graduate students		0.9	3.2	31.9
From bachelor's to preliminary	2			
Former graduate students		2.9	7.2	
Graduate students in residence 1951–52		2.5		
From bachelor's to Ph.D.	3			
Former graduate students		3.7	10.0	31.9

[a] Data from tables 34, 35, and 36.

[8] "Graduate Students in Economics, 1904-1940," *American Economic Review*, Dec. 1942, p. 823.

[9] *Employment and Compensation in Education*, National Bureau of Economic Research, Occasional Paper No. 33, New York, 1950, p. 37.

Summary of Data

The data on residence and elapsed time are summarized in table 37. This table shows the theoretical time required between various points in the graduate program, the actual average periods of residence, the average elapsed time, and the average ages of candidates at the completion of each step. As the table indicates, the period of actual residence exceeds the theoretical time. The average residence for the master's degree is 1.5 years or one-half year more than the theoretical time. This is accounted for in part by the fact that at some institutions the master's degree is awarded after successful completion of the preliminary examination. However, the difference is due mainly to the fact that many students are in residence for more than one year before completing the requirements for the master's degree. This has become the typical situation at many institutions. The residence from master's to preliminary for former students also exceeded the theoretical one year, but for the 1951-52 group, the average was equal to one year. The residence from the preliminary to the Ph.D. is slightly less than the theoretical one year. This is due to the fact that many students write all or part of their dissertations *in absentia*. The fact that the average is so close to one year (and that many dissertations are written partly or wholly *in absentia*) suggests that the task of preparing a dissertation ordinarily requires substantially more than one year. Altogether, the average residence from the bachelor's to the Ph.D. is 3.7 years or 0.7 of a year in excess of the theoretical 3. When it is considered that the average residence is 3.7 years and that many students do considerable work *in absentia*, it must be concluded that the total *work* time required for a Ph.D. is probably on the average more than 4 years. The elapsed time exceeds the theoretical time by threefold.

Concluding Comments

The question posed by the above facts is whether the elapsed time—especially for the Ph.D.—is too long. A substantial number of graduate professors believe that it is; on the other hand, a somewhat larger number do not find the elapsed time excessive. The responses on the elapsed time for the Ph.D. were as follows:[10]

too long	34%
too short	3
about right	41
uncertain	7
no answer	15
Total	100

[10] Schedule VII: 59 respondents.

The arguments favoring the long period before completion of graduate work pertain to maturity and experience. It is said that students gain more from graduate study and perform more satisfactorily if they have substantial work experience and maturity. This they cannot have if they pursue graduate study uninterruptedly after college. There is undoubted validity in this argument. If one were to outline the ideal sequence of events in the life of a doctoral candidate, one might well prescribe some work experience prior to completion of the degree. In the preceding two chapters, I have already pointed out the advantage of experience in research and teaching and have recommended that as many students as possible serve as research and teaching apprentices. In many cases, it might be desirable for some of this experience to be obtained on the job away from graduate school. But there is a genuine question as to how much experience and consequent delay before taking the Ph.D. is necessary or desirable—all things considered.

The answer to this question depends in part on one's conception of the Ph.D. If the Ph.D. is to be reserved only for mature persons who have been seasoned by years of practical experience, then the long period of gestation is justified. This concept of the Ph.D. was undoubtedly encouraged during the period when the degree was becoming a union card for college teaching and when, therefore, the graduate student body contained many older college teachers bent on acquiring the approved credentials of their profession. If, on the other hand, the Ph.D. is regarded not as something to be awarded in middle life after some of the most productive years have passed, but as something to be given to a young person who has mastered the basic knowledge and techniques of economics and who shows ability and promise, then the argument for the long period becomes much less persuasive. I lean strongly toward the latter concept of the degree. I feel that although a year or two of experience is undoubtedly most useful, further delay is usually undesirable and in many cases disastrous.

The explanation of the long period of elapsed time is almost always one or more of the following (aside from military service): (1) delay in the choice of a career, (2) inadequate prior preparation for graduate study, (3) financial necessity, (4) procrastination, and (5) overly ambitious dissertations. No one of these can be strongly defended.[11] I have heard of few candidates who deliberately delayed the Ph.D. for any extensive period in order to gain experience—or even who were advised to do so.

[11] A critic suggests that another reason for slowness is the tendency for the adviser (and the rest of the faculty) to insist that the student take all courses that would aid his examination performance before permitting him to stand for his preliminary examination. He adds "It's not all the student's fault. The preliminary should be taken as early as possible—after only the basic minimum of course work is taken."

It seems to me that the frequent delay in the choice of a career is due partly to faulty recruitment policies. As pointed out in Chapter 6 efforts should be made to achieve earlier recruitment and selection of students who are fitted to become professional economists. It is true that not every student can be expected to find himself before the end of his undergraduate years. Yet there is obviously much less uncertainty in the case of those who enter law, medicine, architecture, engineering, or chemistry than is true of those entering economics. It is up to the economic profession to do a better job of recruitment and selection of students for graduate study.

The problem of inadequate prior preparation has been discussed in Chapter 6. That this is a frequent cause of delay in the completion of a doctorate can hardly be doubted.

The financial problem is always present and will undoubtedly cause undesirable delay for many students. Yet this problem is less urgent for younger students whose family obligations are likely to be minimal than for older students. Therefore, better and earlier recruitment and selection will help in this respect. Other partial solutions are: (1) more funds for financial support of graduate students and (2) use of existing funds to see fewer students through to the degree—rather than more students only through the preliminary examination.

The frequent practice of writing dissertations *in absentia* has multiple disadvantages. The dissertation lacks adequate supervision and the project tends to be pursued as a secondary chore added to a regular job. Under these conditions the student can do justice neither to his job nor his dissertation. As a result frustrations develop which dim the creative spark not only for the immediate project but also for future scholarly work. The situation is even worse for those students whose course work is interrupted by financial necessity. Those who receive the degree after intermittent periods of residence have gained something less than those who have been able to pursue an integrated plan of study without interruption. It is noteworthy that the frustrations and divided responsibilities resulting from the delay and the work *in absentia* occur during the student's most productive years—namely, during the third and fourth decades of his life.

Little need be said about procrastination as a cause of delay. It is surely of frequent occurrence. Graduate advisers should be watchful and should press those students to finish who show signs of putting things off unnecessarily.

The overly-ambitious dissertation is a frequent cause of delay. This again raises the question of the nature and purpose of the dissertation. This has been discussed in Chapters 4 and 9.

The basic issue is this: should the dissertation be a *magnum opus*

which represents an important and extensive contribution to the field? Or should it be a piece of research, suited to the abilities of a young scholar, which will acquaint him with subject matter and technique and will provide a test of his ability to carry on more advanced scholarly work in the future? My judgment leans to the latter alternative. I believe that the scale and scope of a dissertation should be such that a student could be reasonably expected to complete it in a year (or at most two years) of concentrated work. The dissertation should not be thought of as a final scholarly product representing the most advanced work of which the student will ever be capable, but rather as a first major effort which may be developed further in later years—or which may be the first of a long series of research enterprises to be conducted by the student over his working lifetime.

The long time-period of most graduate careers is a significant cause of mortality among students. As time goes on without completion of the degree, students become immersed in their work, acquire increasing financial responsibilities, and become discouraged. The result is hundreds, perhaps thousands of partly finished doctorates, and a profession in which many of the practitioners have not had adequate academic training or the discipline and experience of carrying on a solid piece of independent research. I would not argue that in all cases this is disastrous or even undesirable. But the profession, collectively and individually, would be more productive and more competent if a greater proportion of the practitioners had been persuaded, or had been able, to find a way to complete their graduate programs.

Chapter 12

THE GRADUATE DEPARTMENT OF ECONOMICS

In this chapter, graduate education in economics will be considered from the point of view of the qualities and characteristics of the departments in which it occurs. I shall raise issues and offer tentative suggestions regarding the staff, facilities, organization, and opportunities afforded by graduate departments of economics. Whereas earlier chapters have dealt with various aspects of the educational process, this one will be concerned with the departments in which the process takes place.

I approach this subject with extreme diffidence because I am fully conscious of the fact that there is by no means a necessary correlation between the physical characteristics of a department of economics and the quality of the education conducted therein. A large budget, a distinguished staff, and the most complete facilities do not *necessarily* make a good department. While Mark Hopkins on the end of a log or Socrates conversing in the public square may not represent the ideal educational situation for all purposes, yet excellent education can sometimes be had with minimal staff and facilities. Nevertheless, my discussions, observation, and thinking on the problem all have led to the conclusion that the nature of the department does make a difference and that substantial costs are involved in providing graduate education of high quality.

A Graduate Department

In all but a handful of universities undergraduate and graduate instruction in economics are closely associated. The same staff and the same physical facilities are utilized for both purposes. This arrangement is advantageous in terms of cost. In addition, it offers the positive advantage of providing opportunities for graduate students to become apprentice teachers. In many institutions, however, there are problems involved in the relationship between the graduate and undergraduate phases of instruction in economics. In some, the emphasis is on undergraduate instruction and the graduate department is merely an incidental appendage which supplies a few assistant teachers and occupies some marginal time of the regular staff. In others, the emphasis is upon graduate instruction and research and the undergraduate part of the program is neglected. In some of these latter the alumni have complained bitterly that the undergraduate student has become the forgotten man of higher education.

This is not the place to consider these large issues. It is worth noting, however, that there are important differences between undergraduate and true graduate work—differences in content, in objectives, and in spirit. Graduate work exists for the purpose of training men to become scholars. The students are relatively mature persons who have chosen their careers and are ready to engage in serious specialized study. They need opportunity for independent creative work of a type that is congenial to their interests and appropriate to their maturity. They need to break away from undergraduate ways and attitudes. This clearly calls for a fairly distinct separation of the graduate from the undergraduate program. There is a real question as to whether adequate graduate instruction can be offered in institutions where it can be only an incidental appendage to an undergraduate program.

Where graduate instruction is given, staff time should be specifically allocated to this activity. There is need for the creation of an environment, a student body, a set of courses, a set of practices, and perhaps some facilities which are uniquely *graduate* and which together can be identified as a graduate program. At some institutions now offering advanced degrees (or planning to offer such degrees) these conditions do not prevail. While these institutions may turn out many good students, there is a serious question if they are providing as good an environment as they should for the development of these students.

Any institution offering graduate work should allot a distinguishable and fairly definite amount of staff-time, courses, funds, and facilities to the graduate program. These things, together, might be thought of as the *graduate department of economics*.[1] I do not mean to imply by this that the graduate department should necessarily be organized as a separate administrative unit, or that its staff members devote themselves exclusively to graduate work. I mean only that there should be an identifiable graduate program sufficiently distinguishable from the undergraduate program to have its own institutional "personality" and its own *esprit de corps*. In the remainder of this chapter, I shall consider the question of what characteristics and qualities such a "graduate department" should have.

Graduate Courses

In general, courses for graduate students should be operated separately from those for undergraduates. While I should not wish to carry

[1] In most universities, the graduate and undergraduate parts of economics departments are at least conceptually distinguishable in that the former is a part of the graduate college and the latter a part of the liberal arts college. I am suggesting that they should be actually distinguishable.

this recommendation to the extreme of suggesting that graduate students should never be permitted to take undergraduate courses or undergraduate students graduate courses, yet on the whole it seems fairly clear that graduate work should involve a break with undergraduate standards, methods, objectives, and attitudes. One of the best ways of making this break is to conduct separate classes of graduate caliber.

The mere provision of separate classes is, however, no guarantee that the desired kind and level of instruction will be achieved in graduate courses. Many professors have reported that they thought the standards in graduate courses were lower than those in undergraduate courses. In undergraduate courses, there is a kind of impersonality, spirit of competition, and definiteness of subject matter which makes for rigor and objectivity in the evaluation of students. In graduate courses, small numbers, personal acquaintance with students, desire to maintain enrollments, and difficulty of applying objective standards all militate against rigor and high standards. It is said that sometimes an "A" or "B" in an undergraduate course actually means a higher level of accomplishment than the same grade in a graduate course. Thus, the suggestion that graduate students should on the whole be taught separately is based on the assumption that the graduate courses would be more rigorous and demanding than corresponding undergraduate courses.

A Ph.D. program of the type suggested here (conducted separately from the undergraduate program) would involve a substantial staff load. It would require the offering of no less than 16 graduate courses and seminars of semester length.[2] These would include perhaps three or four courses in economic theory, one in history of economic thought, two in economic history, two in statistics, and at least seven or eight in other fields. If any considerable range of choices were to be permitted, even more courses would be necessary. But the graduate staff load also includes research and the supervision of theses. This part of the load should be specifically included as part of the official duties of staff members. These activities should not be considered merely extra chores to occupy spare time. Many department heads and graduate deans with whom I discussed these matters feel that staff members should be allotted time for research and for supervision of theses as part of their official teaching load. They feel that the active supervision of 5 or 6 theses should be considered the equivalent of one course. Altogether, these calculations suggest that the provision of a genuine graduate program is a very expensive undertaking in terms of staff requirements.

[2] Perhaps only 8 courses and seminars if only the master's degree is awarded.

Staff

The most important resource of any graduate department of e nomics is, of course, the staff. This raises the issue as to what ough be the characteristics of such a staff, both individually and collectiv

The first question is this: Ought there to be certain minimal sta ards for eligibility of a staff member for graduate teaching in e nomics? Some universities try to set formal standards for admissior faculty members to status in the graduate college. These standards clude degrees, experience, publications, etc. I doubt the efficacy of th standards—at least when they are administered by committees dra from many fields. The standards tend to be expressed in terms degrees, experience, seniority, and number of publications rather tl ability to lead graduate students toward professional competer Unquestionably degrees and experience are desirable. But I doubt t this condition should be applied to *every* member of a graduate st I even question the frequently stated proposition that *every* mem of a graduate staff should have had research experience or should actively engaged in research. It seems to me that the standards fo graduate staff should be applied not to every individual but rathe the entire staff viewed as a group organized to achieve certain p poses. Such a staff might well include individuals who would not m some of the more conventional academic standards.

As we look at the staff as a whole, however, we *can* say that it sho meet certain minimal standards. It should be composed largely persons of maturity, experience, scholarly accomplishment, and *c rently* active research interests. It should also contain a suffici number of well-known and distinguished scholars to give the dep ment status in the eyes of the profession-at-large. Without this cannot give its students confidence that they are studying with mer stature, it cannot give these students support in their later professio careers, and its degrees will be of inferior value in the labor market

Diversity of Staff

The staff should have *diversity* with respect to (1) substantive fi of specialization, (2) theoretical vs. empirical interests, (3) scient vs. policy interests, and (4) academic vs. practical experience. I s comment briefly on each of these aspects of diversity.

First, a sufficient number of substantive fields should be represen by staff members of graduate caliber to enable students to obt authoritative training in (1) the common core areas of econo theory, economic history, history of economic thought, and statist and (2) in at least three or four other major areas of economics.[3]

[3] If only the master's degree is awarded, the number of areas outside the core need at a minimum, only one or two.

view of the importance of economic theory and the wide range of this field, it is possible that more than one staff member in this area would be essential.[4] It is not necessary or desirable, however, that every specialty within economics be represented. The attempt to do so may detract from rather than enhance the quality of the staff. Moreover, it is entirely legitimate for departments to concentrate more heavily in those fields in which they are able to achieve distinction. But such specialization should not be achieved at the expense of inadequate coverage of the core fields and of a sufficient number of other fields to permit breadth of training. In any case, good departments will be more than a collection of technicians and specialists. They will contain men of broad interests and philosophical predilections.

Second, the staff should contain persons whose interests are primarily theoretical, some whose interests are primarily empirical, and others who combine these two approaches. Many existing departments have not achieved balance in this respect. Some are composed almost exclusively of staff members interested in theory, others (fewer in number) are composed almost solely of men whose interests are primarily empirical. I believe that in many departments steps should be taken, in their long-run planning, to correct these imbalances.

Third, any graduate staff should include persons who are interested in the practical application of economics to problems of public and private policy, but at the same time should include persons who approach economics from the point of view of pure science. I believe that considerable imbalance exists in many departments in this respect.

Fourth, any graduate staff should contain persons who have had practical experience in government *and* persons who have had practical experience in business, labor organizations, etc. While it is not necessary to include some staff members who have "carried a precinct or met a payroll," it is desirable to include persons who look at economics from the perspective of important practical affairs of which they have intimate knowledge. Fortunately, the number of academic economists who have had such experience is much larger today than it was a generation ago. This has been one of the contributions to our profession of the New Deal and of World War II. There is also an increasing tendency for academic economists to carry on part-time consulting and other professional activities in government and business while retaining their university connections. Within limits this is wholesome. But it is a practice fraught with potential abuses. It has been reported that some staff members devote so much time to outside activities that they do not give adequate attention to their teaching and are unable to give time to students. Also, it is said that some staff members devote so

[4] It would be desirable for all staff members to be conversant with theory.

much of their energy to programmatic and *ad hoc* research connected with their consulting functions that they no longer engage in fundamental research designed to advance basic knowledge in the field. This problem is said to be even more serious because the heaviest demands from the outside are for the services of some of our most distinguished and capable economists. It has even been said that whole departments are partially undermined by the outside pressures on their staff members. In my judgment this is a serious problem for the entire profession. While outside work is undoubtedly valuable, it should not become so great a preoccupation as to impair the educational and research programs of whole departments. The problem has become serious partly because the services of economists have been in great demand—and because academic economists have felt a responsibility to serve when they would help. A contributing factor has been the low salary scales in universities which have encouraged economists to take opportunities for extra income even when their intellectual interests might have dictated otherwise. These low academic salaries, which are often below the outside competitive market for economists, are explained partly by the necessity of keeping salaries in line with those of professors in fields having fewer alternative opportunities. One wonders if universities might not be wise, from the long-run social point of view, to pay salaries nearer to the competitive level for persons whose outside market value exceeds their academic salaries. At any rate, the objective is to build staffs in which there is reasonable contact with the outside world and thus to bring authentic knowledge of worldly issues to teaching and research in economics.

In the above discussion I do not mean to imply that diversity should take precedence over all other goals in building a graduate economics faculty. Excessive preoccupation with diversity would almost surely result in mediocrity. In the interests of balancing up the team, more competent scholars would often be passed over in favor of second-rate men. Nevertheless, the need for diversity cannot be wholly ignored in staff policy. It is *one* important factor, though not the only one.

In discussing diversity, one is tempted to add a fifth respect in which a graduate staff should be diversified, namely, ideological orientation. It can be argued (1) that the safest antidote to ideological bias is a staff which includes persons having a variety of viewpoints, and (2) that students should be under the tutelage of a group of able persons representing a wide range of ideological positions and should be free to develop their own views in an *environment* which is ideologically neutral. But there are grave dangers in too meticulous concern about "balance" in this respect, especially when this involves weighing ideological considerations in the appointment of individual staff mem-

bers. It would be intolerable if individual academic appointments were made on the basis of applicants' political views rather than on the basis of professional competence. Therefore, it would seem a sounder procedure to achieve ideological diversity as a by-product of diversity with respect to special field, methodological approach, experience, and educational origin rather than by scrutinizing each candidate's beliefs. If genuine diversity in all these other respects is achieved, the probabilities are high that reasonable ideological diversity will also be achieved.

In order to achieve a desirable degree of diversity in the respects mentioned, a graduate department should include a substantial number (at least 6 or 8) staff members who devote substantial amounts of time to graduate teaching and related activities.[5] The program should be arranged so that all students actually have contact with as many of the staff members as possible. For this purpose the prevalence of year-long graduate courses with one professor should be examined with a view to having each student study for shorter periods with a larger number of staff members. This would help to prevent tendencies of students to become disciples of particular professors. Such a relationship usually involves slavish acceptance by the student of the professor's ideas and prevents the student from achieving genuine intellectual independence.

The requirement of diversity calls for the selection of staff from varied sources. There is no place for inbreeding on a graduate faculty of economics. Additional diversity can be obtained by occasionally employing visiting professors who can be useful in introducing new ideas and approaches and also in bringing an outsider's evaluation of existing practices.

Student Body

A graduate student body of small numbers presents certain advantages. With small numbers, it is possible to achieve close personal relations between students and staff members, and to give individual attention to students. A small student body also contributes to friendliness and informality. But smallness in number of students can be overdone. There are important educational advantages, even apart from considerations of cost, to be attained through larger numbers of students. Many professors feel that graduate enrollments of 10 or 20 or 30 are small for the most effective work. Many feel that an optimum graduate enrollment would be perhaps 50 or more.

There are many advantages of larger size: (1) graduate classes (separate from undergraduate classes) can be justified, (2) such classes

[5] The number might be somewhat less if only the master's degree is awarded.

can have enough students (including at least a few very good ones) to permit active group discussion, inter-stimulation, and competition, (3) accurate evaluation of individual students is possible since student accomplishments can be rated in terms of averages and dispersions for large numbers, (4) a kind of impersonal relationship between teachers and students can be established that makes for objectivity in the judgment of students and eases the burden of failing them when it is necessary to do so, (5) larger numbers helps to create an environment in which students learn from each other through informal discussions outside the classroom, (6) with larger numbers there is less concern about maintaining or building enrollments and hence standards can be more rigorously maintained, and (7) a larger student body is likely to be more diverse as to interests, background, geographic origin, etc., and therefore more stimulating. These are important and persuasive considerations. They point toward the conclusion that a graduate program can seldom be conducted effectively with a handful of students and that there are genuine economies of scale to be had in terms not only of cost but of *educational* effectiveness.

At the other extreme numbers can become too large unless staff and facilities can expand proportionately. With too many students, the evils of large classes and excessive impersonality begin to appear. And there may be disadvantages to *very* large size even if a high ratio of staff and facilities to students is maintained.[6] From many discussions with teachers and administrators, I have gathered that graduate classes and seminars of perhaps 5 to 15 students are considered optimal, and that classes which lie very far outside these limits are not likely to meet the educational ideal.

Facilities

The minimal facilities for graduate work include an adequate library[7] and necessary equipment for statistical research. In Chapter 10, I suggested the desirability of a research environment in which various kinds of investigations are being actively pursued. This presupposes some clerical staff and facilities for collecting, tabulating, and analyzing data. Other facilities which are highly desirable include office space for students and common rooms where graduate students and faculty may fraternize. The latter are found effective as a means of stimulating extra-curricular discussion and group morale.

[6] In discussing the relative advantages of various sizes of graduate student bodies, it was assumed that admission standards and student requirements are held constant. If large enrollments are attained by lowering entrance and other requirements, the above arguments do not apply.

[7] See Robert B. Downs, "Leading American Library Collections," *The Library Quarterly*, July 1942.

A Note on Economies of Scale in Graduate Education

As indicated earlier, graduate training is sometimes conducted as an incidental by-product of an undergraduate program: graduate students attend advanced undergraduate classes, carry on independent study, and write theses under the guidance of individual professors for whom the chore of supervision is considered an uncompensated addition to an already full teaching load. Under these conditions, graduate education is virtually without monetary cost. Indeed if it provides a supply of assistant teachers who receive less than the going rate for their services, it may actually show a profit. If, on the other hand, a separate graduate program of the type recommended is to be provided, the cost is substantial.

In this section, I shall try to indicate the order of magnitude of the cost of a minimal graduate program and the relation of the graduate enrollment to this cost. In so doing, I shall make several arbitrary assumptions about the nature of the program and of the student body: (1) that the graduate program is minimal in scope and range of offerings, including only 16 one-semester graduate courses and seminars of which 8 are offered each semester; (2) that the standard teaching load for staff members is three courses; (3) that the average annual salary per staff member is $7,000; (4) that one-half the students are first-year students, all of whom are required to write master's theses, one-quarter are second-year students, and one-quarter are third-year students all of whom are required to write doctoral dissertations; and (5) that the supervision of five theses or dissertations is considered equal to one course in the teaching load of staff members.

The fixed costs will include staff salaries for teaching courses and seminars and for conducting research, and the outlays for a library and other physical facilities. If 8 courses are offered each semester, this will require 2-⅔ staff members (full-time equivalent) at a cost of $18,700. On the assumption that a substantial amount of research should be in progress in a graduate department, I shall suppose that the equivalent of 2 full-time staff members will be assigned to research at a cost of $14,000. Library and other facility costs assignable to the graduate program I have set arbitrarily at $5,000 which is surely a very small figure. The total of these fixed costs is $37,700.

The cost of thesis supervision is variable depending on enrollment. With the distribution of students by classes as assumed, one-fourth of them would be writing a doctoral dissertation each year and another one-fourth would be writing a master's thesis each semester. At any given time, the number of theses and dissertations in progress would be half the number of students. Since five theses or dissertations are

considered equal to one course, 15 of them would require the equivalent of one full-time staff member at $7,000.

With these hypothetical data, the relationship between enrollment and cost would be as shown in table 38. The right-hand column also shows the effect of enrollment on the number of students per class on the assumption that 8 graduate courses are offered each semester.

TABLE 38.—HYPOTHETICAL RELATIONSHIP BETWEEN GRADUATE ENROLLMENT, COST PER YEAR, AND SIZE OF CLASSES

Enrollment	Total fixed cost	Total variable cost	Total cost	Average cost per student	Average number of students per class
10	$37,700	$ 2,333	$40,033	$4,003	1.3
20		4,667	42,367	2,118	2.5
30		7,000	44,700	1,490	3.8
40		9,333	47,033	1,176	5.0
50		11,667	49,367	987	6.3
60		14,000	51,700	862	7.5
70		16,333	54,033	772	8.8
80		18,667	56,367	705	10.0
90		21,000	58,700	652	10.3
100		23,333	61,033	610	12.5
150		35,000	72,700	485	18.8

In view of the large amount of fixed cost (with constant variable cost) in the assumed program, average cost declines sharply as enrollment increases; and in view of the assumption that the number of courses remains constant, the average size of classes increases as enrollment increases. Average classes do not exceed 10 students until the enrollment reaches 80. Therefore, assuming that classes averaging 10 students each are not too large, it could be argued—both on educational and financial grounds—that a desirable enrollment might be 80 or more.

The hypothetical case illustrated in table 38 is arbitrary and artificial. Its only purpose is to illustrate the effect of enrollment on cost and on educational effectiveness. Nevertheless, it casts doubt on the desirability of offering graduate programs when enrollments are very small, or of instituting graduate programs when the prospects of adequate enrollments are slight. When true graduate programs are offered for small numbers of students, the cost is exorbitant and the educational results not necessarily superior.

One may ask: Why do so many departments go into the graduate business on a small scale? The answer, I think, lies basically in the feeling that there is prestige for the university, the department, and the staff in the offering of graduate work. At some universities, depart-

ments have been urged to enter the graduate field by top administrators who hope to achieve greater standing for the entire institution in this way. Other institutions have entered the graduate field in a small way because of a desire to serve students of the immediate area who may not be able to afford to attend a more distant graduate school.

My general judgment on this subject, based on numerous conversations and on the considerations presented above, is that the best environment for graduate work, other things equal, is one in which the number of students exceeds perhaps 40. In cases where only the master's degree is given, the minimum that would seem desirable would be perhaps 30 students.

I have emphasized the disadvantages of small scale operation because that is the problem in most departments. At a few universities, especially since the war, departments of economics have achieved very large graduate enrollments running up to several hundred. A great deal of adverse criticism has been directed toward these departments. It is likely that this criticism was partly justified. Classes have been large, faculty loads of thesis supervision have been heavy, students have encountered difficulty in getting personal attention from professors, many graduate classes have been taught by junior personnel, and facilities have not expanded to accommodate the increased load. At present, however, graduate enrollments in these institutions are apparently declining, and the problem may be disappearing. But if overcrowding in these few departments should persist, stricter limitation of enrollment might be desirable.

Data on Staff, Enrollment, and Costs

One of the questionnaires used in this study requested information on graduate enrollments in economics and on the numbers and salaries of staff officially engaged in graduate instruction and/or research. Because of the difficulty of allocating staff-time between undergraduate and graduate activities, the data obtained were obviously very rough.

Nevertheless, these data point to general conclusions regarding student-staff ratios and instructional costs for graduate education in economics. Altogether, 37 departments, representing all sizes and types of institutions, provided information. The most notable conclusion from these data, as shown in table 39, is the wide variability of graduate departments with respect to enrollments, size of staff, student-staff ratios, and costs per student. The differences in scale of operation as shown by this table are not surprising, but the differences in cost seem so great as to suggest that some departments are wasteful in their expenditures on small numbers of students, and that others are devoting too little resources to graduate instruction. The limiting case of this

TABLE 39.—FREQUENCY DISTRIBUTION OF REPORTING GRADUATE DEPARTMENTS BY NUMBER OF STAFF MEMBERS, STUDENT ENROLLMENTS, STUDENTS PER STAFF MEMBER, STAFF COSTS, AND STAFF COSTS PER STUDENT[a]

Number of staff members officially engaged in graduate instruction and/or research	Number of departments	Number of staff members officially engaged in graduate instruction or research (full-time equivalents)	Number of departments	Number of students in residence 1951–52	Number of departments
0–3	3	1	4	0–9	4
4–5	2	2	8	10–19	12
6–7	9	3	6	20–29	6
8–9	11	4	3	30–39	4
10–11	3	5	4	40–59	3
12–14	4	6	5	60–79	4
15 or more	5	7–10	3	80 or more	4
		11 or more	4		
Total	37	Total	37	Total	37
Ratio: students to staff (full-time equivalent)	**Number of departments**	**Staff cost per student: instruction only (in hundreds of dollars)**	**Number of departments**	**Staff cost per student: instruction and research (in hundreds of dollars)**	**Number of departments**
3	4	1–2	4	1–2	2
4	5	3–4	9	3–4	6
5	5	5–6	6	5–6	4
6	7	7–8	2	7–8	2
7–8	3	9–10	5	9–10	7
9–10	4	11–15	4	11–15	6
11–15	4	16–20	6	16–20	5
16–20	3			21–25	4
20 or more	2			26 or more	1
Total	37	Total	36[b]	Total	37

[a] Schedule III: 37 institutions provided information on the subject out of 59 respondents.
[b] No information from one respondent.

latter tendency is represented by several institutions (not included in table 39) at which graduate instruction is conducted without any staff or staff costs—in the sense that no separate graduate classes are provided, no staff time is allotted to research, and the supervision of theses is handled by staff members as an extra chore over and above their full undergraduate loads.

There is wide diversity in the relation between student enrollment and staff costs per student. The several departments in any given en-

rollment class vary widely in size of staff and staff costs per student. For example, the staff in the four reporting institutions having enrollments between 30 and 39 students ranged from 2 to 12 persons (full-time equivalents). However, there is some correlation between enrollment and cost, as shown by the average costs for departments in various enrollment brackets (see table 40). In general, those departments with larger enrollments operate with higher student-staff ratios and with lower staff costs per student. That the differences in these averages are not greater is due to the fact that departments with small graduate enrollments tend to provide relatively less *separate* graduate instruction than departments with larger enrollments. Incidentally, the

TABLE 40.—RELATION OF STUDENT ENROLLMENT TO STUDENT-STAFF RATIOS AND COSTS PER STUDENT[a]

Number of students 1951–52	Number of departments	Average ratio of students to staff (full-time equivalent)	Staff cost per student: instruction only	Staff cost per student: instruction and research
0–9	4	4.7	$1,393	$1,610
10–19	12	5.1	1,021	1,459
20–29	6	5.2	972	1,219
30–39	4	5.6	602	875
40–59	3	9.6	423	659
60–79	4	10.4	340	568
80 and over	4	8.0	563	905
Total	37			
Average for the combined group		7.1	595	952

[a] For source, see table 39.

fact that the institutions with very large enrollments had a lower student-staff ratio and higher average cost per student than some of the middle-sized departments does not lead to the conclusion that graduate departments necessarily have a u-shaped cost curve. The relatively high cost for the large departments is explained by the fact that these are distinguished departments with high salaries, heavy expenditures for research, and large and varied staffs. As shown in table 40, the average staff cost per student for the 37 reporting institutions was $952.

I do not wish to draw any firm conclusions from these data. Yet I think they do suggest an unevenness in the cost and quality of graduate work in economics offered in various institutions. They also indicate that graduate instruction is expensive, especially when conducted on a

small scale. This, it seems to me, should give pause to those institutions which are contemplating entering the field, and also should raise questions at other institutions regarding the desirability of leaving the field. But these are big issues in which many factors besides cost and efficiency are often decisive.

Administrative Organization

The discussion thus far has referred to the department of economics as though there were only one such department in each university. This is, of course, far from the actual situation at many institutions. It is perhaps more common for graduate training and research in economics and closely related fields to occur within each of several administrative units. Among these are: (1) the department of economics, (2) the school of business, (3) the department of agricultural economics usually located in the college of agriculture, (4) the department or school of home economics, (5) the college of law, (6) the institute of labor relations, (7) various area study groups such as the Russian institute or the institute for Latin American studies, (8) the institute of international relations, (9) the department of industrial management in the college of engineering, (10) the division of industrial psychology in the department of psychology, and (11) other miscellaneous institutes, committees, commissions, task forces, etc., such as the institute of communications research, institute of public administration, division of social science research, or council on housing research. The purpose of this section is to consider the causes and consequences of this administrative fragmentation of economics.

Historically, the process of fragmentation began 50 or more years ago with the widespread organization of schools of business. In recent years, however, the process has apparently speeded up as literally hundreds of special agencies having connections with economics have been created. The resulting organization of the field is complex—some think chaotic. Economics, however, is not the only field in which this kind of fragmentation has occurred. Indeed, it is a widespread phenomenon, a marked characteristic of academic development in our time.

The administrative fragmentation of the field of economics may be explained in terms of several objectives or forces. First, it has occurred as a result of the effort of universities to mobilize their resources to deal effectively with a wide variety of social issues, particularly those having inter-disciplinary aspects. Many of the schools and institutes have grown out of the attempt to achieve a workable administrative structure for fruitful interdisciplinary relationships. The labor relations

institutes have been notable examples of this; even the business schools have important interdisciplinary aspects.

Second, the fragmentation has occurred as a result of efforts to meet the demands for various kinds of specialized training in agricultural economics, business, labor relations, international relations, housing, public administration, etc. While these instructional programs might have been carried on in conventional departments, it was thought that more practical or more realistic or more concentrated training might be given in a special administrative division.

Third, the fragmentation has occurred as a way of seeking favorable public relations through creating special autonomous units which would establish and maintain contacts with special interest groups such as labor, agriculture, or business. An incidental purpose has been to emphasize work in areas having news value and popular appeal because of a direct relation to important issues of the day.

Fourth, the creation of these special units has occurred as a device for raising money. Apparently, it has been easier to obtain funds for a special unit having an intriguing title and an assignment closely related to current issues than to finance the same work in the traditional departments. The foundations have almost certainly contributed to the fragmentation. A special situation has been the creation of separate departments of agricultural economics because of the availability of Federal funds for research and extension. The recent availability of Federal funds for contract research has also stimulated the further development of separate administrative units.

Fifth, these special units have been created to give scope to the ambitions of energetic academic promoters or to reduce friction between staff members with varying interests and points of view—especially to separate those with theoretical interests from those with more "practical" or "programmatic" interests. This last has been a particularly important force in causing the separation of business schools from economics departments. Those economists whose interests have been relatively theoretical have often not been congenial colleagues for those of a more practical turn of mind. The former are sometimes considered visionary, impractical, and radical by the latter; and the latter are sometimes considered crass and mundane by the former. These attitudes are evident in many institutions. I regret to say that in some, the economic theorists are accused of intellectual snobbery, and as a result there are strong anti-theoretical attitudes on the part of persons in the applied fields. In some institutions, the pressure to organize separate divisions has resulted from an effort to relieve students of the requirements (especially economic theory) of the economics department. This is one of the motives underlying the movement to offer a separate Ph.D.

in business administration and in agricultural economics. I have even heard the suggestion from a group of accountants that no student should be permitted to sit for the C.P.A. examinations unless he has been trained in a "school" of accountancy having a dean who reports directly to the president of the university.

What are the consequences of this fragmentation from the point of view of graduate education in economics? In my judgment, many of the consequences are undesirable. Perhaps important ends have been attained through this administrative cutting up of economics but I doubt if one of them has been improvement in the education of economists or in the progress of the discipline. There are several principal consequences. First, the development of economics has been uneven—some fields such as agricultural economics, business, or labor, upon which large funds have been lavished, have been elaborated in great detail by an army of specialists, whereas other fields like consumer economics or economic history have been given relatively little support.

Second, various types of economists, located in separate administrative units, have not been able to maintain as close communication with one another as would have been desirable. For example, the economics of the firm, as developed by economists, has been relatively out of touch with developments in the business or engineering schools; or the theory of wages has not always been informed by the knowledge of specialists in labor relations. Conversely, the students in business or labor relations have often lacked the benefit of developments in theory. It can be argued, of course, that administrative barriers can be surmounted by those who genuinely wish to keep up with developments throughout the field; I am convinced, however, that communication tends to be much closer when these barriers do not exist.

Third, the training of economists tends to be more highly specialized and narrower when it occurs in separate administrative units than when it occurs in a more comprehensive unit. Students in business, agricultural economics, labor relations, etc., are likely to acquire less than optimal breadth—even for successful professional work in these fields. Similarly, students of general economics will often receive a narrower training in a department stripped of the applied fields than in a more inclusive department.

Fourth, the specialized units tend to acquire close contacts with—and sometimes to be controlled by—the outside groups (especially business, agriculture, and labor) whose activities they are studying. This fosters ideological biases and leads to difficulties in maintaining academic freedom and scientific objectivity. Even the general economics department, when it has been divorced from the more practical aspects of

the field, probably tends to develop its own ideological biases. At least, those in schools of business often charge economists with biases toward government planning, deficit spending, etc. Staff members of some business schools have reported to me that they advise their students not to take work in the "radical" economics departments.

Fifth, the specialized units tend to command a large share of the funds available for economic research and thus starve the general economics department. There may also be a tendency among the institutes to engage in those kinds of research or other activities for which money can be raised without careful regard to the development of the entire field or to the progress of basic areas.

Sixth, as a result of the setting up of many administrative units, the urgent problems close to great public issues of the day are handled in the specialized units, leaving only the more general and theoretical areas—which are less related to practical issues—for the department of economics. This means that the department tends to lose touch with the real world. At the same time the specialized units lose contact with the discipline and the contributions of theory, and tend to become "unintellectual"—to quote one business school dean.

Seventh, the fragmentation of the field, by dividing the student body into several separate groups, sometimes prevents any of the administrative units from achieving the enrollments needed for efficient operation.

This is a strong indictment of the fragmentation which has become so widespread. Some of my critics think it an exaggerated indictment, as it may well be. It may be readily conceded that the problem does not exist in every university. In some institutions the fragmentation has been only skin deep—it has affected form, not substance. In some cases useful results have been achieved through the creation of new administrative units. In some institutions, the several administrative subdivisions have worked out well-balanced programs and harmonious relationships. Nevertheless, I maintain that there is a serious problem.

What is to be done about the administrative organization of economics? Perhaps nothing *can* be done. We may be at the mercy of great social and intellectual forces which are bringing about a revolution in the classification and relationship of various fields and sub-fields. Perhaps it is too much to expect that in a field as dynamic as economics we shall ever be able to crystallize an organizational pattern. Yet I believe there are certain principles which ought to govern in this matter. The basic problem is one of the relationship among substantive areas which at one time were considered to fall wholly or partly within economics. But the problem appears also in the relationship between the economics and other areas which have traditionally been assigned to other

fields, e.g., sociology, political science, law, psychology, philosophy, etc.

First, the integrity of the traditional field of economics should be protected so far as practicable, and no parts of economics should be removed to other administrative units unless the reasons for doing so are overwhelming. The burden of proof for so doing should be on those who propose the change, and adventitious circumstances or temporary expediency should seldom govern.

Second, in many cases, it will be possible to accomplish objectives by establishing *ad hoc* curricula or *ad hoc* research teams within departments of economics or through interdepartmental cooperation—rather than by organizing new administrative units. The problems have often been satisfactorily solved in this way. When, for purposes of public relations or money-raising, it seems desirable to create new administrative units, they should whenever possible be placed *within* rather than outside departments of economics.

Third, all economists in a university should be in communication with one another. This is facilitated by having their offices in close proximity, by their having a formal connection with the economics department, and by providing seminars and discussion groups at which they can learn about each other's work. In this connection communication is a two-way process. It is frequently reported that theoretical economists are more interested in outward rather than inward communication. Many staff members of business schools, labor relations institutes, and departments of agricultural economics complain that they have not been able to establish a two-way communication with the economists of the economics department.

Fourth, at least the common core fields of economic theory, economic history, and history of economic thought should be retained in the economics department which should do the teaching of these subjects for all students regardless of their administrative affiliation.

Fifth, general economics departments should develop special courses for students whose major interest lies in fields related to economics but who are not to become primarily economists, for example, students of accounting, of industrial management, of industrial psychology, etc. To expect these students to meet the same requirements as majors in economics is unreasonable. It can lead only to friction and to efforts to by-pass the department. Many cases have been reported to me of students, in various fields marginal to economics, who have been prevented from getting their Ph.D.'s because of unwillingness or inability to meet theory requirements designed for economics majors. Some departments have tried to meet this situation by holding the requirement but altering the courses, thus diluting the training of their own economics majors. This, I feel, has been unwise.

Finally, sixth, I believe that many of the organizational difficulties could be prevented or overcome if all of the social sciences and their related applied fields could be brought together into one large administrative unit having a flexible departmental structure. Such an administrative unit, if under capable leadership, would facilitate communication among the staff-members within each discipline and also communication among staff-members of related disciplines. It would simplify the administrative problems involved in developing interdisciplinary programs. It would help to maintain closer and mutually helpful connections between basic and applied fields. It would help to break down the rigid administrative and intellectual lines that separate various disciplines.

But even when all of these things have been done, many of the organizational problems will remain. These are problems we must live with in an intellectual world which does not lend itself to neat compartmentalization.[8]

Evaluation of Departments

In any discussion of educational institutions, their staffs and their facilities, the question inevitably arises as to what devices might be employed to stimulate existing departments to improve, or to prevent unqualified departments from continuing in (or entering) the field. One answer to this is, of course, demand and supply. This is not a complete answer, because the incentives to the supply of graduate work are not always confined to the meeting of a demand. Moreover, the consumer is not always able to choose intelligently, and often is influenced by subsidies, by personal relationships, or by the convenience of remaining near home.

A second answer is the pressure of opinion within the profession. It is sometimes held that inferior graduate work will be found out, and that those responsible will lose caste within the profession; conversely, that superior graduate work will be recognized and will bring professional status and honor to those responsible. It is true that public opinion does exert considerable pressure in this respect. Unfortunately, however, communication within the profession is far from perfect, and there are some departments of economics which have so lost contact with the outside profession that they do not feel the pressure of professional opinion.

[8] For a discussion of the subject of fragmentation with reference to political science, see American Political Science Association, Report of the Committee for the Advancement of Teaching, *Goals for Political Science*, New York, 1951, pp. 86-97. On administrative relationships between departments of economics and schools of business, see Horace Taylor (editor), "The Teaching of Undergraduate Economics," *American Economic Review* (supplement), Dec. 1950, pp. 121-24.

A third answer is accreditation by an outside agency. Several professional associations have entered this field, e.g., the American Chemical Society and the American Association of Collegiate Schools of Business. Apparently accreditation has sometimes achieved significant results, its greatest benefit deriving from the fact that it requires the careful study of standards and represents an important educational experience for all concerned.[9] As anyone connected with higher education knows, however, accreditation is also subject to abuses—especially because the standards tend to be weighted with those criteria which are objective (number of staff, degrees, dollars spent, administrative organization, etc.) rather than with those qualitative considerations which are all-important in education. Sometimes, accreditation has monopolistic overtones, and it tends to impose uniformity and to discourage experimentation. Formal accreditation by an outside agency is far from a panacea, and I am not prepared to recommend that the American Economic Association at this time enter the business of accreditation.

I believe, however, that graduate departments should from time to time subject themselves and their programs to examination by qualified outside members of the profession. I believe that every graduate department should arrange for such an examination by an outside visiting committee at least every five years. The report of the examinating committee should be confidential for use by the department and the general administration of the university. The examining committee should be appointed not by the department to be examined but by the president or graduate dean of its university, or by an outside agency such as the American Economic Association. The Association should stand ready to cooperate both in formulating standards for judging departments and in nominating *ad hoc* committees for investigating departments. The expense of this work should be borne by the university whose department is under review.

To carry out this recommendation, the Association should establish a standing committee the function of which would be to formulate standards for graduate education, to encourage universities to place their departments under review, and to nominate *ad hoc* committees for the investigation of particular departments.

[9] For a discussion favorable to accreditation, see Association of American Universities, "Report of the Special Committee on Accrediting Graduate Study," *Journal of Proceedings and Addresses,* 1945, pp. 39-70.

Chapter 13

INSTRUCTIONAL METHODS

This chapter is in no sense a comprehensive treatment of instructional methods. It presents several issues and offers a few suggestions regarding procedures in the teaching of students of economics at the graduate level.

Independent Study

A major issue in graduate study concerns the degree of independence with which the student pursues his work. At the one extreme, his entire graduate program would consist entirely of a series of formal courses (American undergraduate style) with systematic coverage of fields, specific assignments, and frequent examinations. At the other extreme, the student would be entirely on his own, his only requirement being that of satisfying an examining committee at the conclusion of his studies (European style). In the latter case, he would be free to attend lectures and seminars and to benefit from the guidance of faculty members, but his work would be entirely independent and he would be judged only by his final performance and not by his day to day work.[1] In practice, American graduate education falls between these extremes, but there are substantial differences among institutions with respect to the degree of independence of students. In most, despite protestations to the contrary, graduate education is closer to the American undergraduate pattern than to the European pattern. Considerable emphasis is placed upon systematic courses, course examinations, hours of credit, residence, and the other aspects of American college routine. The deviations from the undergraduate pattern include the seminars in which special topics or problems are treated, a limited amount of independent study or research, and the writing of theses and dissertations. The various comprehensive examinations are supplementary to the examinations given in courses and seminars.[2] Moreover, the comprehensive examinations are often

[1] Several valuable papers on the teaching of economics in various countries were presented at a meeting sponsored by the International Economic Association at Palloires (Haute Savoie), France in August 1951. These papers were published in mimeographed form.

[2] On the whole, I favor the use of course examinations and grades, as well as a comprehensive examination, in judging students. The former provide independent judgments of the student in a variety of situations and by a variety of professors acting independently. The latter provides only a single collective judgment. However, I believe that the comprehensive examinations should cover *fields* and not courses.

merely additional examinations over particular courses rather than examinations covering entire "fields"—as they purport to be. The questions which this situation suggest are: Would graduate education be improved if it represented a sharper breaking away from undergraduate procedures? Would it be desirable to place less emphasis on formal systematic courses and to give greater scope to seminars, independent study, and research?

Unfortunately, I do not know the answer to this question. Most departments are led toward undergraduate methods by the fact that many students bring to graduate study an inadequate intellectual background. It seems necessary to drill them systematically on fundamentals before letting them spread their wings. Yet I have the uneasy feeling that our procedures delay rather than advance intellectual independence and maturity. Particularly, I feel that something might be done for the more gifted students to relieve them of going through the routine of earning "credits" and meeting various formal requirements.

A promising proposal in this direction, with which Professor Friedman of the University of Chicago is experimenting, would be a "workshop" for selected second-year graduate students. They would devote their entire time to this enterprise. Only those students would be eligible who had adequate preparation in theory, statistics, and money prior to entering graduate school, and who had completed rigorous graduate work in the "core" fields during the first graduate year. Then, during the second year, they would devote full time each semester or quarter to one problem in a selected field. They would work on this problem in close consultation with the indicated professor, and develop a report in publishable form (or as nearly so as possible). Then, in the third year, the student would proceed to his dissertation. The workshop proposal has the advantage of giving students the opportunity for independent and concentrated work.

Another possible method of achieving more independence would be greater use of seminars. Unfortunately, it seems that seminars have a way of degenerating into straight courses—so a sharp break with customary practice may be necessary to achieve the desired result. Still another device is to permit superior students to engage in independent study for "credit" under the guidance of one or more professors.

Creative Activity

A closely related problem concerns the balance between (a) active and creative work of students (solving problems, original writing, discussing issues) and (b) passive and absorptive pursuits (reading and listening to lectures). A possible criticism of much graduate work is

that it consists too largely of the latter. While no one would argue that reading and listening are unnecessary, there is a real question as to whether the reading and listening that is done for its own sake and without problems to solve or questions to answer is as useful or meaningful as that which is directed toward specific problems and questions. An increase in the amount of creative work done by students would doubtless improve graduate education. This, incidentally, provides a strong argument for the retention of the master's thesis or its equivalent. Some attention also might be given to planning the topics and schedules of the papers and problems a student will do for his various courses. This would make it possible to space deadlines conveniently, and to provide for the inclusion of various kinds of topics, e.g., empirical, theoretical, public policy, etc.

Another type of creative activity is discussion not only in the classroom but outside. Apparently a serious lack in many departments, as reported by both students and faculty, is the dearth of facilities and the absence of traditions conducive to vigorous discussion. Common rooms, student offices, graduate dormitories, student clubs, and gatherings of students at faculty homes are all helpful in this regard. Universities located in small towns have an advantage in that a campus student life is possible. A requirement for student discussion is an intellectual spirit which apparently requires leadership and the interaction of vigorous personalities. Without this, even the most favorable physical surroundings will not create an atmosphere of fruitful discussion.[3]

A topic closely related to independent and creative student work is the use of the problem or case method in instruction. So far as I know no one proposes that graduate education in economics be conducted entirely by the case method. There are many who recognize the merits of this method for certain purposes and several experiments along this line are under way. The experience of the Harvard Graduate School of Business is well known. Also the several graduate schools of public administration have developed and used case materials with apparent success. In dealing with problems of public policy, the use of cases would undoubtedly be helpful in the teaching of economics at the graduate level—especially as a way of dealing with public policy issues. The use of cases is of great utility in bringing economic principles into touch with reality, in illustrating the complexity of the real world, in showing the strength and limitations of economics, in demonstrating its relations to other areas, and in stimu-

[3] On the general subject of independent study, creative activity, etc., see Horace Taylor (editor), "The Teaching of Undergraduate Economics," *American Economic Review* (supplement), Dec. 1950, pp. 150-1, 154-5.

lating interest in the field. Those who have experimented with the case method in economics advise the use of a few selected cases intensively analyzed rather than many superficially studied. However, it must be recognized that the difference between a "case" and an "illustration" is only one of degree; many teachers have been using the case method without so describing it or considering that they were departing from conventional teaching methods. Indeed much of economic history is, or could be, the study of cases. Yet something new and useful has been added when particular episodes in public policy formation are investigated carefully with the object in mind of "solving" the problem.

The great difficulty in using the case method of instruction is to find suitable materials for the presentation of cases to students. To meet this problem, the law colleges, the Harvard School of Business, and the Schools of Public Administration have been forced to devote enormous energies to the development of case materials. To do the same for economics would require a similar major effort. Could the American Economic Association provide leadership in the development of case materials? I am inclined to think so. I suggest, therefore, that a committee on the case method of instruction be appointed to consider needs, to inventory present resources, and to plan methods of augmenting these resources. The experience of the public administration group under the leadership of Dr. Harold Stein would be extremely useful in this respect.[4]

Incentives and Rewards for Distinguished Scholarship

Graduate students probably do not need, and might resent, attempts to apply the elaborate system of awards, prizes, honorary memberships, etc., which are used to spur undergraduate students on to greater accomplishment. However, something useful might be done to honor or reward those graduate students who have done distinguished work. The David A. Wells Prize at Harvard is an example of a well-known award of this type. It would be possible for many graduate departments of economics to do more than they now do to provide special incentives for exceptional work. Possible devices would be to publish outstanding theses and dissertations, to award prizes for outstanding scholarship, or to provide special honorary fellowships. The American Economic Association might enter this field by offering prizes for the best theses or dissertations, or by publishing them completely or in abstract form.

Standardized Examinations

At present, most departments provide comprehensive examinations

[4] See Harold Stein (editor), *Public Administration and Policy Development: A Case Book*, New York, 1952.

in written and/or oral form. The written examinations rely largely on broad general questions requiring fairly lengthy discussion, and the oral examinations are usually informal and relatively unplanned. There is reason to suppose that these examination procedures are not always as rigorous or as objective as might be wished. The difficulty of achieving good examination procedures is especially difficult in the departments having small numbers of students. This is true for two reasons: (1) the close personal relations of students and professors makes objective judgment difficult and it makes the failing of a student, when necessary, a most painful experience; and (2) it is difficult to develop comparative standards when the number of students is very small. Even in larger departments, the question arises as to how their standards and the quality of their students compare with those in other universities.

There are two possible solutions to this problem. One would be to employ outside examiners. Many professors favor this plan. It is common in Europe, and is used by several liberal arts colleges in the United States. It presents, however, serious administrative and financial difficulties, especially when the number of students to be examined is small.[5] A second possible solution would be the use of standardized examinations which would be given to students in many universities. Such examinations could be provided, for each of the principal fields, at the master's and the Ph.D. level. The papers from all universities would be judged by one committee, and the grades or scores reported on a confidential basis to each of the participating departments. The examination might be of the "essay" type or it might combine essay and objective questions.

While no department would wish to rely entirely upon an outside standardized examination in judging its candidates, such a procedure would help both in judging the ability of students and in measuring the effectiveness of the department in selecting and educating students. The disadvantages of the outside examination are that it might lead to standardization, and that it might tend to divert the educational process from those areas which the professors consider important to those subjects which are likely to be covered on the examination. The influence of these factors is seen clearly, for example, in the education of accountants which is often geared to the objective of passing the C.P.A. examination. Outside examinations for economists, I think, ought never occupy a position analogous to that of the C.P.A. examinations. They should be thought of as advisory and as supplementary to existing examination procedures. If conducted in this way, they

[5] About half of the professors queried on this proposal were favorable and half opposed.

might exert a helpful influence toward clarifying objectives and toward raising the quality of graduate education in economics.

If such standardized examinations were to be given, who should administer them? This task might be carried on under the aegis of the American Economic Association possibly with the cooperation of a professional agency such as the Educational Testing Service. I recommend that the Association explore the possibility of developing a program for conducting nation-wide examinations for graduate students in economics.

Miscellaneous Suggestions

In my visit to graduate departments of economics, I observed or heard about several educational devices which seem to work well and which might be employed more widely. These included the following:

(1) Mimeographing and distributing seminar papers in advance of their presentation.
(2) Publication of seminar papers, together with student critiques, after the papers have been presented, discussed, and revised.
(3) Organization of small groups of students for review prior to comprehensive examinations.
(4) Examination of students on a list of important books as part of the comprehensive examinations.
(5) Publication of examination questions for prior years.
(6) Reading of written comprehensive examinations, for each field, by several professors each of whom does not know the judgment of any of the others.
(7) Reading of written comprehensive examinations without the student names appearing on the papers.
(8) A paid graduate student assistant to handle student relations, including social functions, use of common rooms, discussion groups, etc.
(9) Credit given for proficiency examinations in lieu of certain courses—especially for superior students.

Chapter 14

GRADUATE STUDY IN ECONOMICS: A NATIONAL VIEW

The precise number of universities in the United States and Canada which offer graduate work in economics is difficult to ascertain because the number fluctuates from year to year, and it is difficult to classify some institutions which theoretically *offer* graduate work but seldom or never actually award any advanced degrees. During the two years 1949-50 and 1950-51, 126 U. S. institutions actually awarded one or more master's degrees in economics.[1] And during the post-war years 1945-6 through 1950-1, 67 institutions in the United States and Canada actually awarded one or more Ph.D.'s (see table 41). On the basis of these figures, one would guess that there are about 135 institutions in the United States and Canada which offer and sometimes give graduate work in economics. Of these, perhaps 70 award *both* the master's degree and the Ph.D., and 65 give only the master's degree.

Enrollment and Number of Degrees

In 1951-52 these institutions had a combined graduate enrollment in economics of roughly 3,000 students.[2] During recent years they have awarded about 800 master's degrees in economics per year[3] and from 200 to 400 Ph.D.'s.[4]

No data are available on the trend in the number of master's degrees awarded, but figures are available on the number of Ph.D.'s awarded over the period 1925-26 through 1950-51. These data are presented in table 43, and comparisons are made with the number of doctorates awarded in all fields. These figures show a generally rising trend in

[1] The number awarding master's degrees in 1950-51 was 102 (see table 42) and in 1949-50, 113. Some institutions awarded master's degrees in only one of these years, hence the figure 126 exceeds either of these numbers. See U. S. Office of Education, *Earned Degrees Conferred by Higher Educational Institutions,* 1949-50. Data for 1950-51 were kindly made available to me by Mr. Robert C. Storey of the Office of Education.

[2] This estimate is based on enrollment figures supplied by 37 institutions. The total was estimated by adjusting the reported figures on the basis of ratio of advanced degrees awarded by all institutions to the number awarded by the reporting institutions.

[3] According to the U. S. Office of Education the following numbers of master's degrees in economics were awarded (cf., table 42).

1946-47	693
1948-49	863
1949-50	921
1950-51	807

[4] See table 43.

TABLE 41.—DOCTORAL DISSERTATIONS IN ECONOMICS ACCEPTED BY AMERICAN UNIVERSITIES, 1925–26 TO 1950–51[a]

University	1925–26 to 1934–35		1935–36 to 1944–45		1945–46 to 1950–51	
	Number	Percent	Number	Percent	Number	Percent
American	18	1.5	12	0.9	12	0.8
Boston	—	—	6	0.5	3	0.2
Brookings	40	3.4	—	—	—	—
Brown	2	0.2	9	0.7	2	0.1
Bryn Mawr	1	0.1	2	0.2	—	—
California (Berkeley)	59	5.1	57	4.4	40	2.7
California (Los Angeles)	—	—	—	—	1	0.1
Catholic	7	0.6	19	1.5	13	0.9
Chicago	73	6.3	75	5.8	95	6.3
Cincinnati	—	—	1	0.1	1	0.1
Claremont	—	—	—	—	2	0.1
Clark	4	0.3	7	0.5	7	0.5
Colorado	2	0.2	2	0.2	4	0.3
Columbia	112	9.6	150	11.5	132	8.8
Cornell	82	7.0	94	7.2	68	4.5
Duke	5	0.4	16	1.2	14	0.9
Duquesne	5	0.4	—	—	—	—
Fletcher School	—	—	1	0.1	—	—
Florida	—	—	—	—	2	0.1
Fordham	2	0.2	5	0.4	10	0.7
George Peabody	2	0.2	1	0.1	1	0.1
George Washington	7	0.6	4	0.3	6	0.4
Georgetown	4	0.3	—	—	3	0.2
Harvard	122	10.5	121	9.3	257	17.1
Illinois	79	6.8	73	5.6	66	4.4
Indiana	2	0.2	1	0.1	17	1.1
Iowa	27	2.3	35	2.7	46	3.1
Iowa State	—	—	10	0.7	27	1.8
Johns Hopkins	30	2.6	17	1.3	6	0.4
Kansas	2	0.2	—	—	3	0.2
Kentucky	—	—	1	0.1	8	0.5
Laval	—	—	1	0.1	1	0.1
Louisiana	—	—	9	0.7	6	0.4
Loyola	—	—	—	—	2	0.1
McGill	—	—	3	0.2	2	0.1
Maryland	2	0.2	—	—	5	0.3
Massachusetts	2	0.2	1	0.1	5	0.3

[a] Source: C. S. Marsh (editor), *American Colleges and Universities*, American Council on Education, Washington, 1936; *Doctoral Dissertations Accepted by American Universities*, H. W. Wilson Co., New York, annual. Similar data on "Candidates preparing doctoral theses covering the period 1904–50" are presented in L. A. Froman, "Graduate Students in Economics," *American Economic Review*, Sept. 1952, p. 603, and Dec. 1942, p. 818. Because of rounding, percentage totals do not necessarily equal 100.

TABLE 41 (*Continued*)

University	1925–26 to 1934–35		1935–36 to 1944–45		1945–46 to 1950–51	
	Number	Percent	Number	Percent	Number	Percent
M.I.T.	—	—	—	—	21	1.4
Michigan	32	2.7	36	2.8	33	2.2
Michigan State	2	0.2	—	—	7	0.5
Minnesota	35	3.0	51	3.9	48	3.2
Missouri	4	0.3	3	0.2	8	0.5
Nebraska	2	0.2	7	0.5	2	0.1
New School	—	—	—	—	8	0.5
New York	9	0.8	56	4.3	46	3.1
North Carolina	8	0.7	25	1.9	9	0.6
Northwestern	29	2.5	39	3.0	23	1.5
Notre Dame	2	0.2	1	0.1	—	—
Ohio State	25	2.1	51	3.9	47	3.1
Oregon State	—	—	—	—	2	0.1
Pennsylvania	76	6.5	25	1.9	42	2.8
Penn State	1	0.1	3	0.2	5	0.3
Pittsburgh	2	0.2	21	1.6	17	1.1
Princeton	23	2.0	23	1.8	16	1.1
Purdue	—	—	7	0.5	25	1.7
Radcliffe	16	1.4	11	0.8	21	1.4
Rutgers	1	0.1	—	—	2	0.1
St. Louis	2	0.2	6	0.5	13	0.9
Southern California	3	0.3	17	1.3	20	1.3
Stanford	35	3.1	18	1.4	15	1.0
Syracuse	3	0.3	1	0.1	5	0.3
Temple	—	—	5	0.4	3	0.2
Texas	7	0.6	22	1.7	34	2.3
Toronto	—	—	2	0.2	6	0.4
Vanderbilt	2	0.2	7	0.5	6	0.4
Virginia	21	1.8	24	1.8	25	1.7
Washington (St. Louis)	—	—	9	0.7	3	0.2
Washington (Seattle)	4	0.3	5	0.4	2	0.1
Washington State	—	—	—	—	1	0.1
Wisconsin	99	8.5	91	7.0	92	6.1
Yale	31	2.7	18	1.4	24	1.6
Other	—	—	—	—	3	0.2
Total	1,166	100.0	1,317	100.0	1,501	100.0

number of doctorates in economics with year to year variations apparently correlated with national income. Doctorates in economics as a percentage of the total for all fields were apparently higher in the late 1920's than since.

TABLE 42.—MASTER'S DEGREES IN ECONOMICS CONFERRED, 1950–51[a]

University	Number	Percent	University	Number	Percent
Alabama	2	0.2	Michigan	29	3.6
American	10	1.2	Michigan State	8	1.0
Arizona	4	0.5	Minnesota	36	4.5
Arkansas	4	0.5	Mississippi	4	0.5
Baylor	10	1.2	Missouri	12	1.5
Boston College	10	1.2	Montana	3	0.4
Boston University	12	1.5	Mt. Holyoke	2	0.2
Brooklyn	1	0.1	Nebraska	12	1.5
Brown	6	0.7	New Hampshire	2	0.2
Bucknell	2	0.2	New Mexico	2	0.2
Buffalo	1	0.1	New School	15	1.9
California (all campuses)	30	3.7	New York	35	4.3
Carnegie Tech.	1	0.1	Notre Dame	10	1.2
Chicago	45	5.6	North Carolina	10	1.2
Cincinnati	9	1.1	North Texas	5	0.6
Clark	3	0.4	Ohio State	9	1.1
Colorado	3	0.4	Ohio U.	2	0.2
Columbia	64	7.9	Oklahoma	2	0.2
Connecticut	7	0.9	Oklahoma A. & M.	1	0.1
Cornell	3	0.4	Oregon	3	0.4
Denver	6	0.7	Pennsylvania	21	2.6
Drake	7	0.9	Penn State	9	1.1
Duke	10	1.2	Pittsburgh	26	3.2
Florida	5	0.6	Prairie	1	0.1
Florida State	3	0.4	Princeton	7	0.9
George Peabody	2	0.2	Purdue	4	0.5
Georgetown	1	0.1	Rutgers	8	1.0
George Washington	9	1.1	Sam Houston	1	0.1
Houston	4	0.5	St. Louis	9	1.1
Idaho	1	0.1	South Carolina	3	0.4
Illinois	21	2.6	South Dakota	1	0.1
Indiana	14	1.7	South Dakota State	3	0.4
Iowa	6	0.7	Southern California	8	1.0
Iowa State	19	2.4	Southern Illinois	2	0.2
Johns Hopkins	4	0.5	Southern Methodist	1	0.1
Kansas	5	0.6	Stanford	13	1.6
Kansas State	6	0.7	Stetson	3	0.4
Kansas City	1	0.1	Tennessee	2	0.2
Kentucky	3	0.4	Texas	15	1.8
Louisiana	9	1.1	Texas A and M	1	0.1
Marquette	2	0.2	Texas College	3	0.4
Maryland	3	0.4	Texas State	1	0.1
Massachusetts	2	0.2	Tulane	1	0.1
M.I.T.	3	0.4	Utah	1	0.1
Miami (Florida)	6	0.7	Utah State	1	0.1

TABLE 42 (*Continued*)

University	Number	Percent	University	Number	Percent
Vanderbilt	6	0.7	Western Reserve	2	0.2
Virginia	8	1.0	William and Mary	1	0.1
Washington (St. Louis)	2	0.2	Wisconsin	35	4.3
Washington (Seattle)	10	1.2			
Washington State	2	0.2	Wyoming	1	0.1
			Yale	6	0.7
Wayne	5	0.6		—	—
West Virginia	3	0.4	Total	807	100.0

[a] Source: U. S. Office of Education. These data were kindly made available to me in advance of publication by Mr. Robert C. Storey, Head, Technical Services Unit. Because of rounding, percentage total does not equal 100.

Concentration of Graduate Enrollments

As shown in tables 44 and 45 the universities offering graduate work give widely varying numbers of degrees. More than a third awarded fewer than one doctorate per year on the average, since the war, and only six awarded 10 or more doctorates per year. About a third of the universities awarded one or two master's degrees (in 1950-51) and

TABLE 43.—DOCTORAL DISSERTATIONS ACCEPTED BY AMERICAN UNIVERSITIES, 1925–26 TO 1950–51[a]

Year	Number in economics	Total in all fields	Number in economics as percentage of total	Year	Number in economics	Total in all fields	Number in economics as percentage of total
1925–26	89	1368	6.5	1938–39	150	2928	5.2
1926–27	101	1504	6.7	1939–40	141	3088	4.6
1927–28	103	1548	6.6	1940–41	176	3526	5.0
1928–29	120	1912	6.3	1941–42	181	3243	5.6
1929–30	143	2078	6.8	1942–43	114	2689	4.2
1930–31	138	2183	6.3	1943–44	97	2117	4.6
1931–32	127	2368	5.4	1944–45	71	1576	4.5
1932–33	134	2462	5.4	1945–46	103	1708	6.1
1933–34	109	2620	4.1	1946–47	167	2587	6.4
1934–35	103	2649	4.0	1947–48	203	3609	5.6
1935–36	117	2683	4.4	1948–49	237	4853	4.9
1936–37	127	2707	4.7	1949–50	392	6510	6.0
1937–38	143	2768	5.2	1950–51	399	7477	5.3

[a] Source: C. S. Marsh (editor), *American Colleges and Universities*, American Council on Education, Washington, 1936; *Doctoral Dissertations Accepted by American Universities*, H.W. Wilson Co., New York, annual.

TABLE 44.—FREQUENCY DISTRIBUTION OF UNIVERSITIES BY AVERAGE NUMBER OF DOCTORAL DISSERTATIONS ACCEPTED, 1945–46 TO 1950–51[a]

Average number of doctoral dissertations accepted per year	Number of universities
0–0.4	14
0.5–0.9	11
0.1–1.4	10
1.5–2.4	6
3–4	11
5–6	3
7–9	6
10–14	2
15–19	2
20–29	1
30–39	—
40–49	1
50 and over	—
Total	67

[a] See table 41 for basic data.

TABLE 45.—FREQUENCY DISTRIBUTION OF UNIVERSITIES BY NUMBER OF MASTER'S DEGREES AWARDED, 1950–51[a]

Number of master's degrees awarded	Number of universities
1–2	33
3–4	20
5–6	11
7–9	13
10–14	12
15–19	3
20–29	4
30–39	4
40–49	1
50 and over	1
Total	102

[a] See table 42 for basic data.

only 10 awarded more than 20. This suggests that a large part of the graduate work of the country is concentrated in a few institutions. Table 46 lists the 10 leading universities in number of Ph.D's and master's degrees awarded and indicates the percentage of degrees granted by each. As shown in the table about 60 percent of all doctorates and 43 percent of all master's degrees are awarded by 10 insti-

tutions.[5] The remaining 40 percent of the doctorates are divided among 57 other institutions and the remaining 57 percent of the master's degrees are divided among more than 100 other institutions.

These data on the distribution of graduate degrees among institutions raise the question of whether graduate study is quantitatively too concentrated within a few institutions—or whether it is too widely dispersed among many institutions, or both. I have already considered economies of scale with reference to graduate education (Chapter 13). My tentative conclusion was that it is probably too dispersed—that better and more efficient education would be possible if the student population could be drawn together into a somewhat smaller number of institutions.

TABLE 46.—LEADING INSTITUTIONS IN NUMBER OF ADVANCED DEGREES AWARDED IN ECONOMICS

Ph.D.			Master's degree		
Rank	Institution	Percentage of Ph.D.'s awarded 1945–46 through 1950–51[a]	Rank	Institution	Percentage of all master's degrees awarded 1949–50 and 1950–51[b]
1	Harvard	17.1	1	Columbia[c]	7.6
2	Columbia[c]	8.8	2	Wisconsin[c]	4.7
3	Chicago[c]	6.3	3	Chicago[c]	4.4
4	Wisconsin[c]	6.1	4	New York[c]	4.3
5	Cornell	4.5	5	Michigan	4.3
6	Illinois[c]	4.4	6	Pennsylvania	4.3
7	Minnesota[c]	3.2	7	California (all campuses)	4.1
8	Iowa	3.1	8	Minnesota[c]	3.8
9	New York[c]	3.1	9	Pittsburgh	2.8
10	Ohio State	3.1	10	Illinois[c]	2.5
	Total	59.7			42.8

[a] See Table 1. Data refer to doctoral dissertations accepted.
[b] Basic data from U. S. Office of Education.
[c] Among the first ten for both Ph.D.'s and master's degrees.

I queried graduate professors on this point. With reference to doctoral students, the most frequent answer was that the distribution of students is too highly concentrated *and* that too many institutions are offering graduate work. With reference to the master's degree, there was less concern over the distribution of students.

[5] Six institutions are among the leading ten for both the Ph.D. and the Master's degree (Columbia, Chicago, Wisconsin, Illinois, Minnesota, and New York). Apparently the concentration has not been so great for the post-war period as it was in pre-war years. Whereas the top 10 institutions in the period 1945-46 to 1950-51 produced 60 percent of the doctorates, the ten leaders in 1938-39 to 1941-42 produced 66 percent of the doctorates.

In conversations on this subject, it was sometimes pointed out that excessive concentration of graduate students within a few universities might on the whole be disadvantageous in that it would reduce the amount of diversity in types of programs offered and in points of view represented. Hence it was thought desirable to maintain considerable freedom of entry into the field of graduate education in economics, and not to move toward some sort of accreditation precedure which might limit the number of institutions too rigidly. Moreover, it was pointed out that size alone is no guarantee of quality, and that in fact some of our most distinguished graduate departments are very small—some by deliberate choice. Nevertheless, my general judgment is that too many institutions are offering graduate work and competing for the relatively small flow of students. Ample diversity could still be maintained if the number of institutions were substantially diminished. In point of fact, very little diversity is obtained merely through large numbers because most of the smaller institutions are very conservative and follow consistently the patterns of the larger ones. Today, most of the experimentation and flexibility is to be found in the large and well-known institutions.

My principal conclusion would be a word of caution to institutions which are considering entry into the graduate field, a suggestion to those already in the field marginally to consider whether withdrawal might not be wise. The conclusion stems in part from considerations of costs as presented in Chapter 12.

TABLE 47.—TYPES OF INSTITUTIONS FROM WHICH BACHELOR'S DEGREES WERE OBTAINED BY GRADUATE STUDENTS IN ECONOMICS

	Graduate students in residence 1951–52[a]	Former graduate students who received advanced degrees in 1939–40 or 1949–50[b]
Private universities, members of Association of American Universities	16%	18%
State universities or colleges, members of AAU	21	25
Private universities, not members	15	11
State universities or colleges, not members	9	15
Private liberal arts colleges	16	17
Municipal colleges or universities	4	4
Other	14	3
Unknown	5	7
Total	100	100

[a] Schedule IX: 140 respondents.
[b] Schedule X: 218 respondents.

TABLE 48.—MIGRATION OF GRADUATE STUDENTS IN ECONOMICS: COMPARISON OF INSTITUTIONS OF BACHELOR'S, MASTER'S, AND DOCTORATE

	Candidates preparing doctoral disserta-tions, 1951[a]	Graduate students in residence, 1951–52[b]	Former graduate students who received advanced degrees in 1939–40 or 1949–50[c]
All three different	14%	12%	11%
Bachelor's and doctorate different; no masters	10	1	6
All three the same	13	9	19
Bachelor's and doctorate same; no master's	4	—	2
Bachelor's and master's same; doctorate different	14	9	10
Master's and doctorate same; bachelor's different	30	21	26
Bachelor's and doctorate same; master's different	1	1	1
Bachelor's and master's different; no doctorate	—	27	9
Bachelor's and master's same; no doctorate	—	13	9
Unknown	14	7	7
Total	100	100	100

[a] Source: "Forty-Eighth List of Doctoral Dissertations," *American Economic Review*, Sept. 1951, pp. 786–828. Tabulations included students whose theses were in preparation or had been completed and accepted.
[b] Schedule IX: 140 respondents.
[c] Schedule X: 218 respondents.

At the other extreme, there are a few institutions (probably not more than 2 or 3) at which the number of students possibly exceeds the optimum. Such institutions might well consider limiting their enrollments. It is possible that general enrollment trends and the tapering off of G.I. benefits will accomplish the result without specific action.

The Flow of Students

As shown in table 47, graduate students in economics apparently took their bachelor's degrees in many types of institutions, though the great majority did their undergraduate work in larger "universities" rather than smaller "colleges."[6] As they proceeded to graduate study, a substantial number stayed at the same institution for the master's degree and some stayed on for the doctorate, but a majority moved to another institution at some point in their graduate careers. Table 48 shows the institutional history of three groups of graduate students, and indicates the considerable tendency toward moving from one institution

[6] Cf. L. A. Froman, "Graduate Students in Economics," *American Economic Review*, Sept. 1952, p. 607.

to another. Table 49 presents data on the geographic movement of graduate students during their graduate careers. This table indicates that a third to a half of the students took their graduate work in the same geographic region as their homes but that a majority took their graduate work elsewhere.

When students were asked how they happened to select their graduate institutions, a large minority mentioned such practical matters as geographic proximity to home, finances, and evening school. Another

TABLE 49.—MIGRATION OF GRADUATE STUDENTS IN ECONOMICS: COMPARISON OF GEOGRAPHIC REGIONS OF HOME TOWN, UNDERGRADUATE COLLEGE, AND INSTITUTION GRANTING HIGHEST DEGREE[a]

	Graduate students in residence 1951–52[b]	Former graduate students who received advanced degrees in 1939–40 or 1949–50[c]
All in same region	31%	45%
All in different region	12	6
Home town and undergraduate college same; highest degree different	36	26
Home town and highest degree same; undergraduate college different	6	3
Undergraduate college and highest degree same; home town different	11	9
Unknown	4	11
Total	100	100

[a] Geographic region refers to the standard regions used by the U. S. Census. Home town was defined as "home town at the time you finished secondary school."

[b] Schedule IX: 140 respondents.

[c] Schedule X: 218 respondents.

large group mentioned the high standing of the institution or department. Surprisingly few mentioned desire to study with particular professors or type of work offered.

In general, professors believe that diversity of graduate student population with reference to geographic origin and institution of bachelor's degree is desirable. They also believe that it is good for students to have experience at more than one institution during their academic careers. A substantial number would prefer wider diversity as to geographic and institutional origins of their own student bodies. When questioned on what could be done to increase diversity, many mentioned greater financial aid with which to attract students and nearly as many mentioned departmental improvement.

Specialization and Cooperation

As I traveled about the country visiting graduate departments of economics, I was impressed with the lack of specialization and cooperation among institutions. The great majority of institutions are offering a fairly standardized program with broad coverage of many fields. Little effort is made by institutions to differentiate their offerings or to take advantage of their special resources. This is all to the good to the extent that basic training in fundamentals is essential in the education of all economists. Yet one might have thought that particular institutions would attempt to develop distinction in special fields, for example, government and business, international economics, or labor relations. But one finds remarkably little of this specialization.

Similarly, one finds impressively little cooperation among institutions—even among those located near each other. For example, there is apparently little tendency to encourage one's students to take specialized work at other institutions—even when the quality of such work may be superior. There is little exchange of faculty or participation in the seminars of other universities.

There are notable exceptions to these generalizations, one of the most interesting being the cooperative graduate program offered by the group of colleges in Claremont, California. Yet the lack of specialization and cooperation is almost everywhere more impressive than its presence.

I do not have any clear recommendation as to what might be done about duplication, lack of specialization, and lack of cooperation. The Hotelling principle that competitors tend to converge toward the "middle" of the market may be at work here. At least it seems that each institution might examine its own resources and potentialities carefully, and attempt to direct its activities toward those areas in which it can make the greatest contribution to the nation's facilities for training economists. It is not necessary that every institution try to do everything.

Facilities in Washington and New York

The suggestion has been made frequently that a liaison agency is needed in Washington to represent and serve the graduate departments of economics throughout the country. This agency might perform a variety of functions. The following are some of those which have been suggested.

First, the agency might maintain contact with the many students who are employed in Washington prior to completing their graduate work, and encourage and assist them in completing their graduate studies. Washington has become notable for the number of economists em-

ployed there who have completed all their graduate work "except the dissertation." Presumably, then, the functions of the agency might range from "encouragement" or assistance to actual supervision of the writing of dissertations. In the latter case, it would serve as representative of the universities of original jurisdiction—the latter actually awarding the degrees.

Second, the agency might offer seminars or courses which could be taken by students with or without credit in their home universities.

Third, it might assist candidates by opening up sources of data or research information in Washington, or by offering advice or assistance in the carrying out of research projects.

Fourth, the agency might provide research associateships for young economists—either for graduate students or University staff members.

Fifth, the agency might assist in organizing and administering a program for in-service training of graduate students who are employed in the Federal government.

Sixth, it might provide an ongoing research program which students could observe.

If all of these things were done, the agency would indeed be a busy place. But any one or more of these things would be useful, and the more the better. The main purpose of the agency, from the point of view of academic departments of economics, would be to provide opportunities for students to gain experience in Washington and to encourage and assist those students who are employed in Washington to complete their graduate studies.

The question is: what agency might perform these functions? Many have suggested the Brookings Institution. From the point of view of its history, location, and facilities it would be ideal. I have discussed the matter with Dr. Robert D. Calkins, the new President of the Brookings Institution who tells me that he is interested in exploring the possible usefulness of this organization in the training of economists (though he is in no sense committed to any of the proposed functions listed above). I believe that the profession, perhaps represented by the American Economic Association, should attempt to promote the development of such facilities in Washington.

It is also conceivable that similar facilities could be provided in New York, for example, by the National Bureau of Economic Research. That institution already maintains close relationships with many universities and already offers research associateships and fellowships to young economists.

"Adult" Education for Economists

Finally, I shall consider the question of whether the economic profession offers adequate facilities for its members to "keep up" with

current developments in the field. The principal facilities now employed are professional journals, professional meetings, and contact with colleagues. The latter is not available to many economists who are in smaller colleges or in positions in business and government where the number of professional colleagues is small. Professional meetings, as now conducted, are criticized by many as not helpful for educational purposes—though most consider them useful on other grounds. And there is a surprising amount of complaint directed toward the journals, which are charged with being too esoteric and theoretical.

I do not wish to be associated with these criticisms; yet I feel that more and better facilities could be provided. The following are some suggestions:

1. That sabbatical leaves should be available for all economists including those in small colleges, in government, and in business. It would be extremely helpful if economists in government and business could have extended periods of time off to reflect and to reacquaint themselves with contemporary thought in economics.
2. That a few leading universities might provide short courses or extended conferences intended primarily for the teaching of economics in smaller colleges.
3. That the American Economic Association might supplement the annual meeting by sponsoring smaller and more extended conferences on specialized subjects. A model of such conferences would be those sponsored by the International Economic Association, by the National Bureau of Economic Research, or by the Social Science Research Council.

Appendix

DESCRIPTION OF QUESTIONNAIRES

Twelve separate questionnaires were utilized in the study. In the text of the report frequent references are made to those questionnaires by schedule numbers. The purpose of this appendix is to provide a brief description of each of these schedules.

Schedule I was sent to chairmen of departments of economics in institutions where there was some doubt as to whether graduate work is offered. Its purpose was to ascertain whether graduate work is offered and the number of degrees awarded during 1945-46 to 1950-51. Number mailed, 108; number returned, 61.

Schedule II was sent to the chairmen of all departments of economics offering both the master's degree and the Ph.D., and also of all other departments which granted 4 or more master's degrees (but no doctorates) in economics during the two years 1949-50 and 1950-51. Its purpose was to obtain data on practices and policies in the selection and training of first-year graduate students in economics. The specific topics covered were:

admission
elimination of unfit students
residence requirements
credit and grade requirements
foreign language requirements
courses of study
minor fields
thesis
examinations
flexibility
superior students
advisory system
placement
plans for revision of program
research

Number mailed, 94; number returned, 68.

Schedule III was sent to the same department chairmen as Schedule II. Its purpose was to obtain statistical data on staff, enrollments of first-year graduate students, financial assistance to students, and mailing lists of present and former first-year students. Number mailed, 94; number returned, 59.

Schedule IV was sent to staff members (other than department chairmen) who are engaged at least part-time in graduate instruction in economics in the institutions to which Schedules II and III were sent. Its purpose was to obtain opinions and judgments regarding present practices in the selection and training of first-year graduate students in economics. Specific topics covered were the same as those listed above for Schedule II. Number mailed, 99; number returned, 61.

Schedule V was sent to chairmen of all departments of economics which granted 3 or more Ph.D.'s in economics during the years 1945-46 to 1950-51. Its purpose was to obtain information on the practices and policies in the selection and training of candidates for the Ph.D. in economics. Its general purpose and coverage was similar to that of Schedule II. Number mailed, 53; number returned, 27.

Schedule VI was sent to the same department chairmen as Schedule V. Its purpose was to obtain statistical data, relative to the training of Ph.D. candidates, similar to that obtained in Schedule III on master's candidates. Number mailed, 53; number returned, 32.

Schedule VII was sent to staff members (other than department chairmen) who are engaged at least part-time in graduate instruction in economics in the institutions to which Schedules V and VI are sent. Its purpose was to obtain opinions and judgments regarding present practices in the selection and training of candidates for the Ph.D. Specific topics covered were the same as those listed above for Schedule II. Number mailed, 79; number returned, 59.

Schedule VIII was addressed to persons serving as economists in a wide variety of large business firms. The list to which it was sent was constructed with the advice of several active business economists: Walter E. Hoadley, Jr., Wesley Lindow, Roy L. Reierson, and John Wills. The purpose of the questionnaire was to obtain information about the work of business economists, and to get their opinions and judgments regarding the training of economists for positions in private business. Number mailed, 103; number returned, 49.

Schedule IX was sent to graduate students in residence during 1951-52. Names and addresses of these graduate students were provided by department chairmen who responded to Schedules III and VI. A questionnaire was sent to every third graduate student so listed. The purpose of the questionnaire was to provide personal data (age, geographic origin, prior education, employment, career plans) and opinions regarding graduate study. Number mailed, 361; number returned, 140.

Schedule X was sent to persons who received advanced degrees in economics in 1939-40 or 1949-50. Names and addresses of these persons were supplied by department chairmen who responded to Sched-

ules III and VI. A questionnaire was sent to every third person so listed. In addition, questionnaires were sent to all other persons who received the Ph.D. in 1939-40 or 1949-50 and who are members of the American Economic Association. The purpose of this schedule was similar to that of Schedule IX. Number mailed, 528; number returned, 218.

Schedule XI was sent to the chairmen of departments of economics in institutions which do *not* give graduate work and which have enrollments of 2,000 or more as shown in the *World's Almanac*. The purpose of this schedule was to obtain the opinions of these academic employers of economists regarding graduate education. Number mailed, 203; number returned, 89.

Schedule XII was sent to a small list of leading supervisors of economists in various agencies of the Federal Government. Its purpose was to obtain opinions of these persons regarding the training of economists. Number mailed, 48; number returned, 22.

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ARTICLES

COMMUNICATIONS

BOOK REVIEWS

Manuscripts and editorial correspondence relating to the regular quarterly issues of the REVIEW should be addressed to Bernard F. Haley, Managing Editor of THE AMERICAN ECONOMIC REVIEW, Stanford University, Stanford, California.

OTHER DEPARTMENTS

OLIVER MITCHELL WENTWORTH SPRAGUE

Thirty-ninth President of the American Economic Association, 1937

Oliver M. W. Sprague was born in Somerville, Massachusetts, April 22, 1873. He died in Boston on May 24, 1953.

He attended St. Johnsbury Academy in Vermont before entering Harvard College. From Harvard he received his B.A. degree, *summa cum laude*, in 1894, his A.M. in 1895, and his Ph.D. in 1897. (He was awarded Litt.D. degree by Columbia in 1938.) After a year of study in England, he returned to Harvard as an assistant in economics. He served as instructor 1900-04 and as assistant professor 1904-05, became professor of economics at the Imperial University in Japan in 1905; returned to the newly established Harvard Graduate School of Business Administration in 1908; and was appointed Edmund Cogswell Converse professor in 1913, which post he occupied until 1941, when he became professor *emeritus*.

From 1930-33, Professor Sprague was granted leave to serve as economic adviser to the Bank of England, and in the early months of the New Deal, he served as financial and executive assistant to the Secretary of the United States Treasury. At other times he was adviser to the Reichsbank, the Bank of France, the Bank for International Settlements, and the League of Nations.

As a member of the Gold Delegation of the League of Nations and in his subsequent advisory role, Professor Sprague participated in final efforts to maintain the gold standard. He split with the New Deal in November, 1933, over the best means of promoting economic recovery.

Professor Sprague's advice was also sought by private organizations. At the time of his death, he was director of the National Shawmut Bank of Boston and a member of the advisory board of the Massachusetts Investors Trust. Until shortly before his death he was also an adviser to the General Motors Corporation on foreign exchange problems.

When Professor Sprague served as President of the American Economic Association, he started an innovation in program planning for the annual meetings. With the exception of one session devoted to Marxian economics, the whole program (joint with the American Statistical Association) was centered on the general topic of savings and investment, the leitmotiv being expressed in the title of his presidential address, "The Recovery Problem in the United States."

Professor Sprague was a former president of the Harvard chapter of Phi Beta Kappa, a member of the American Academy of Arts and Sciences, and of the American Philosophical Society. He was the author of *History of Crises Under the National Banking System* (1910), *Banking Reform in the United States* (1911), *Theory and History of Banking* (1929), and *Recovery and Common Sense* (1934).

No. 39 of a series of past presidents of the Association.

O.M.W. Sprague

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MATHEMATICAL, OR "LINEAR," PROGRAMMING: A NONMATHEMATICAL EXPOSITION

By ROBERT DORFMAN*

This paper is intended to set forth the leading ideas of mathematical programming[1] purged of the algebraic apparatus which has impeded their general acceptance and appreciation. This will be done by concentrating on the graphical representation of the method. While it is not possible, in general, to portray mathematical programming problems in two-dimensional graphs, the conclusions which we shall draw from the graphs will be of general validity and, of course, the graphic representation of multidimensional problems has a time-honored place in economics.

The central formal problem of economics is the problem of allocating scarce resources so as to maximize the attainment of some predetermined objective. The standard formulation of this problem—the so-called marginal analysis—has led to conclusions of great importance for the understanding of many questions of social and economic policy. But it is a fact of common knowledge that this mode of analysis has not recommended itself to men of affairs for the practical solution of their economic and business problems. Mathematical programming is based on a restatement of this same formal problem in a form which is designed to be useful in making practical decisions in business and economic affairs. That mathematical programming is nothing but a reformulation of the standard economic problem and its solution is the main thesis of this exposition.

The motivating idea of mathematical programming is the idea of a

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[1] The terminology of the techniques which we are discussing is in an unsatisfactory state. Most frequently they are called "linear programming" although the relationships involved are not always linear. Sometimes they are called "activities analysis," but this is not a very suggestive name. The distinguishing feature of the techniques is that they are concerned with programming rather than with analysis, and, at any rate, "activities analy-

"process" or "activity." A process is a specific method for performing an economic task. For example, the manufacture of soap by a specified formula is a process. So also is the weaving of a specific quality of cotton gray goods on a specific type of loom. The conventional production function can be thought of as the formula relating the inputs and outputs of all the processes by which a given task can be accomplished.

For some tasks, *e.g.*, soap production, there are an infinite number of processes available. For others, *e.g.*, weaving, only a finite number of processes exist. In some cases, a plant or industry may have only a single process available.

In terms of processes, choices in the productive sphere are simply decisions as to which processes are to be used and the extent to which each is to be employed. Economists are accustomed to thinking in terms of decisions as to the quantities of various productive factors to be employed. But an industry or firm cannot substitute Factor A for Factor B unless it does some of its work in a different way, that is, unless it substitutes a process which uses A in relatively high proportions for one which uses B. Inputs, therefore, cannot be changed without a change in the way of doing things, and often a fundamental change. Mathematical programming focusses on this aspect of economic choice.

The objective of mathematical programming is to determine the optimal levels of productive processes in given circumstances. This requires a restatement of productive relationships in terms of processes and a reconsideration of the effect of factor scarcities on production choices. As a prelude to this theoretical discussion, however, it will be helpful to consider a simplified production problem from a common-sense point of view.

I. *An Example of Mathematical Programming*

Let us consider an hypothetical automobile company equipped for the production of both automobiles and trucks. This company, then, can perform two economic tasks, and we assume that it has a single process for accomplishing each. These two tasks, the manufacture of automobiles and that of trucks, compete for the use of the firm's facilities. Let us assume that the company's plant is organized into four departments: (1) sheet metal stamping, (2) engine assembly, (3) automobile final assembly, and (4) truck final assembly—raw materials, labor, and all other components being available in virtually unlimited amounts at constant prices in the open market.

The capacity of each department of the plant is, of course, limited. We assume that the metal stamping department can turn out sufficient stampings for 25,000 automobiles or 35,000 trucks per month. We can then calculate the combinations of automobile and truck stampings

which this department can produce. Since the department can accommodate 25,000 automobiles per month, each automobile requires 1/25,000 or 0.004 per cent of monthly capacity. Similarly each truck requires 0.00286 per cent of monthly capacity. If, for example, 15,000 automobiles were manufactured they would require 60 per cent of metal stamping capacity and the remaining 40 per cent would be sufficient to produce stampings for 14,000 trucks. Then 15,000 automobiles and 14,000 trucks could be produced by this department at full operation. This is, of course, not the only combination of automobiles and trucks which could be produced by the stamping department at full operation. In Figure 1, the line labeled "Metal Stamping" represents all such combinations.

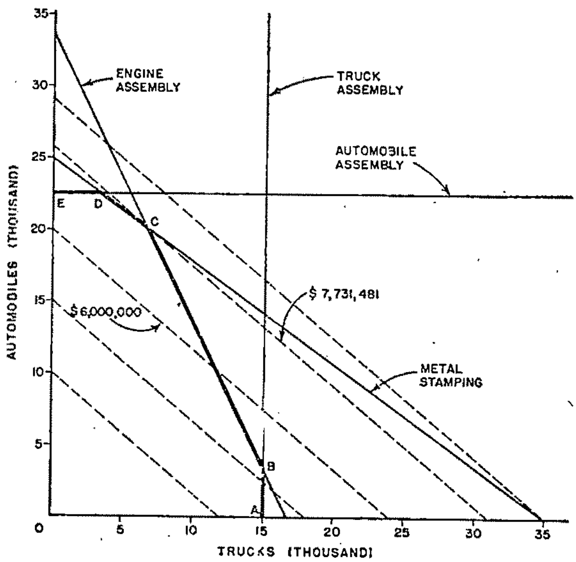

FIGURE 1. CHOICES OPEN TO AN AUTOMOBILE FIRM

Similarly we assume that the engine assembly department has monthly capacity for 33,333 automobile engines or 16,667 truck engines or, again, some combination of fewer automobile and truck engines. The combinations which would absorb the full capacity of the engine assembly department are shown by the "Engine Assembly" line in Figure 1. We assume also that the automobile assembly department can accommodate 22,500 automobiles per month and the truck assembly department 15,000 trucks. These limitations are also represented in Figure 1.

We regard this set of assumptions as defining two processes: the

production of automobiles and the production of trucks. The process of producing an automobile yields, as an output, one automobile and absorbs, as inputs, 0.004 per cent of metal stamping capacity, 0.003 per cent of engine assembly capacity, and 0.00444 per cent of automobile assembly capacity. Similarly the process of producing a truck yields, as an output, one truck and absorbs, as inputs, 0.00286 per cent of metal stamping capacity, 0.006 per cent of engine assembly capacity, and 0.00667 per cent of truck assembly capacity.

The economic choice facing this firm is the selection of the numbers of automobiles and trucks to be produced each month, subject to the restriction that no more than 100 per cent of the capacity of any department can be used. Or, in more technical phraseology, the choice consists in deciding at what level to employ each of the two available processes. Clearly, if automobiles alone are produced, at most 22,500 units per month can be made, automobile assembly being the effective limitation. If only trucks are produced, a maximum of 15,000 units per month can be made because of the limitation on truck assembly. Which of these alternatives should be adopted, or whether some combination of trucks and automobiles should be produced depends on the relative profitability of manufacturing trucks and automobiles. Let us assume, to be concrete, that the sales value of an automobile is $300 greater than the total cost of purchased materials, labor, and other direct costs attributable to its manufacture. And, similarly, that the sale value of a truck is $250 more than the direct cost of manufacturing it. Then the net revenue of the plant for any month is 300 times the number of automobiles produced plus 250 times the number of trucks. For example, 15,000 automobiles and 6,000 trucks would yield a net revenue of $6,000,000. There are many combinations of automobiles and trucks which would yield this same net revenue; 10,000 automobiles and 12,000 trucks is another one. In terms of Figure 1, all combinations with a net revenue of $6,000,000 lie on a straight line, to be specific, the line labelled $6,000,000 in the figure.

A line analogous to the one which we have just described corresponds to each possible net revenue. All these lines are parallel, since their slope depends only on the relative profitability of the two activities. The greater the net revenue, of course, the higher the line. A few of the net revenue lines are shown in the figure by the dashed parallel lines.

Each conceivable number of automobiles and trucks produced corresponds to a point on the diagram, and through each point there passes one member of the family of net revenue lines. Net revenue is maximized when the point corresponding to the number of automobiles and trucks produced lies on the highest possible net revenue line. Now the effect of the capacity restrictions is to limit the range of choice to

outputs which correspond to points lying inside the area bounded by the axes and by the broken line ABCDE. Since net revenue increases as points move out from the origin, only points which lie on the broken line need be considered. Beginning then with Point A and moving along the broken line we see that the boundary of the accessible region intersects higher and higher net revenue lines until point C is reached. From there on, the boundary slides down the scale of net revenue lines. Point C therefore corresponds to the highest attainable net revenue. At point C the output is 20,370 automobiles and 6,481 trucks, yielding a net revenue of $7,731,481 per month.

The reader has very likely noticed that this diagram is by no means novel. The broken line, ABCDE, tells the maximum number of automobiles which can be produced in conjunction with any given number of trucks. It is therefore, apart from its angularity, a production opportunity curve or transformation curve of the sort made familiar by Irving Fisher, and the slope of the curve at any point where it has a slope is the ratio of substitution in production between automobiles and trucks. The novel feature is that the production opportunity curve shown here has no defined slope at five points and that one of these five is the critical point. The dashed lines in the diagram are equivalent to conventional price lines.

The standard theory of production teaches that profits are maximized at a point where a price line is tangent to the production opportunity curve. But, as we have just noted, there are five points where our production opportunity curve has no tangent. The tangency criterion therefore fails. Instead we find that profits are maximized at a corner where the slope of the price line is neither less than the slope of the opportunity curve to the left of the corner nor greater than the slope of the opportunity curve to the right.

Diagrammatically, then, mathematical programming uses angles where standard economics uses curves. In economic terms, where does the novelty lie? In standard economic analysis we visualize production relationships in which, if there are two products, one may be substituted for the other with gradually increasing difficulty. In mathematical programming we visualize a regime of production in which, for any output, certain factors will be effectively limiting but other factors will be in ample supply. Thus, in Figure 1, the factors which effectively limit production at each point can be identified by noticing on which limitation lines the point lies. The rate of substitution between products is determined by the limiting factors alone and changes only when the designation of the limiting factors changes. In the diagram a change in the designation of the limiting factors is represented by turning a corner on the production opportunity curve.

We shall come back to this example later, for we have not exhausted its significance. But now we are in a position to develop with more generality some of the concepts used in mathematical programming.

II. *The Model of Production in Mathematical Programming*

A classical problem in economics is the optimal utilization of two factors of production, conveniently called capital and labor. In the usual analysis, the problem is formulated by conceiving of the two factors as cooperating with each other in accordance with a production function which states the maximum quantity of a product which can be obtained by the use of stated quantities of the two factors. One convenient means of representing such a production function is an "isoquant diagram," as in Figure 2. In this familiar figure, quantities of labor are plotted along the horizontal axis and quantities of capital

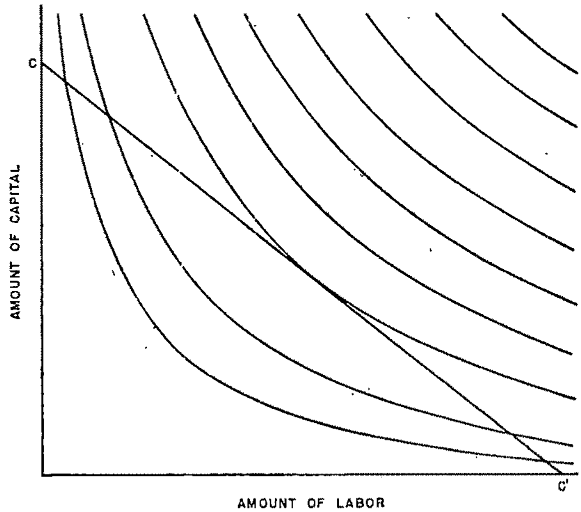

FIGURE 2. AN ISOQUANT DIAGRAM

along the vertical. Each of the arcs in the body of the diagram corresponds to a definite quantity of output, higher arcs corresponding to greater quantities.

If the prices per unit of capital and labor are known, the combinations of labor and capital which can be purchased for a fixed total expenditure can be shown by a sloping straight line like CC′ in the figure, the slope depending only on the relative prices. Two interpretations follow immediately. First, the minimum unit cost of producing the output represented by any isoquant can be achieved by using the combination of labor and capital which corresponds to the point where that

isoquant is tangent to a price line. Second, the greatest output attainable with any given expenditure is represented by the isoquant which is tangent to the price line corresponding to that expenditure.

This diagram and its analysis rest upon the assumption that the two factors are continuously substitutable for each other in such wise that if the amount of labor employed be reduced by a small amount it will be possible to maintain the quantity of output by a *small* increase in the amount of capital employed. Moreover, this analysis assumes that each successive unit decrement in the amount of labor will require a slightly larger increment in the amount of capital if output is to remain constant. Otherwise the isoquants will not have the necessary shape.

All this is familiar. We call it to mind only because we are about to develop an analogous diagram which is fundamental to mathematical programming. First, however, let us see why a new diagram and a new approach are felt to be necessary.

The model of production which we have just briefly sketched very likely is valid for some kinds of production. But for most manufacturing industries, and indeed all production where elaborate machinery is used, it is open to serious objection. It is characteristic of most modern machinery that each kind of machine operates efficiently only over a narrow range of speeds and that the quantities of labor, power, materials and other factors which cooperate with the machine are dictated rather inflexibly by the machine's built-in characteristics. Furthermore, at any time there is available only a small number of different kinds of machinery for accomplishing a given task. A few examples may make these considerations more concrete. Earth may be moved by hand shovels, by steam or diesel shovels, or by bulldozers. Power shovels and bulldozers are built in only a small variety of models, each with inherent characteristics as to fuel consumption per hour, number of operators and assistants required, cubic feet of earth moved per hour, etc. Printing type may be set by using hand-fonts, linotype machines or monotype machines. Again, each machine is available in only a few models and each has its own pace of operation, power and space requirements, and other essentially unalterable characteristics. A moment's reflection will bring to mind dozens of other illustrations: printing presses, power looms, railroad and highway haulage, statistical and accounting calculation, metallic ore reduction, metal fabrication, etc. For many economic tasks the number of processes available is finite, and each process can be regarded as inflexible with regard to the ratios among factor inputs and process outputs. Factors cannot be substituted for each other except by changing the levels at which entire technical processes are used, because each process uses factors in fixed characteristic ratios. In mathematical programming, accordingly, process substi-

tution plays a rôle analogous to that of factor substitution in conventional analysis.

We now develop an apparatus for the analysis of process substitution. For convenience we shall limit our discussion to processes which consume two factors, to be called capital and labor, and produce a single output. Figure 3 represents such a process. As in Figure 2, the horizontal axis is scaled in units of labor and the vertical axis in units of capital. The process is represented by the ray, OA, which is scaled in units of output. To each output there corresponds a labor requirement found by locating the appropriate mark on the process ray and reading straight down. The capital requirement is found in the same manner by reading straight across from the mark on the process line. Similarly, to each amount of labor there corresponds a quantity of out-

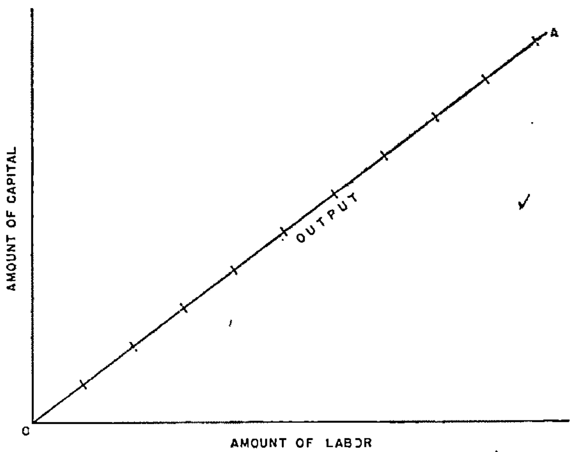

FIGURE 3. A PROCESS

put, found by reading straight up, and a quantity of capital, found by reading straight across from the output mark.

It should be noted that the quantity of capital in this diagram is the quantity used in a process rather than the quantity owned by an economic unit; it is capital-service rather than capital itself. Thus, though more or less labor may be combined with a given machine—by using it more or fewer hours—the ratio of capital to labor inputs, that is, the ratio of machine-hours to labor hours—is regarded as technologically fixed.

Figure 3 incorporates two important assumptions. The fact that the line OA is straight implies that the ratio between the capital input and the labor input is the same for all levels of output and is given, indeed, by the slope of the line. The fact that the marks on the output line are

evenly spaced indicates that there are neither economies nor diseconomies of scale in the use of the process, *i.e.*, that there will be strict proportionality between the quantity of output and the quality of either input. These assumptions are justified rather simply on the basis of the notion of a process. If a process can be used once, it can be used twice or as many times as the supplies of factors permit. Two linotype machines with equally skilled operators can turn out just twice as much type per hour as one. Two identical mills can turn out just twice as many yards of cotton per month as one. So long as factors are available, a process can be duplicated. Whether it will be economical to do so is, of course, another matter.

If there is only one process available for a given task there is not much scope for economic choice. Frequently, however, there will be

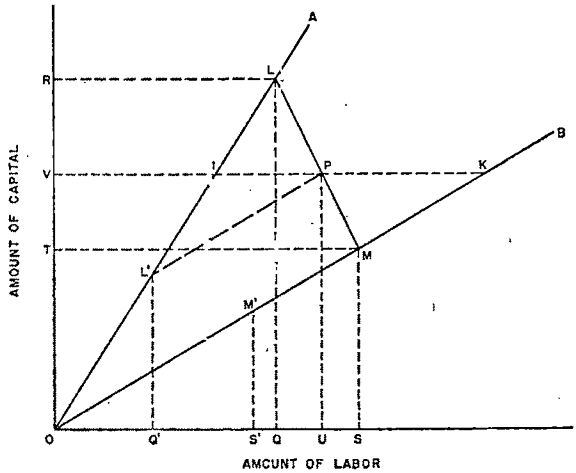

FIGURE 4. TWO PROCESSES

several processes. Figure 4 represents a situation in which two procedures are available, Process A indicated by the line OA and Process B indicated by OB. We have already seen how to interpret points on the lines OA and OB. The scales by which output is measured on the two rays are not necessarily the same. The scale on each ray reflects the productivity of the factors when used in the process represented by that ray and has no connection with the output scale on any other process ray. Now suppose that points L and M represent production of the same output by the two processes. Then LM, the straight line between them, will represent an isoquant and each point on this line will correspond to a combination of Processes A and B which produces the same output as OL units of Process A or OM units of Process B.

To see this, consider any point P on the line LM and draw a line

through P parallel to OB. Let L′ be the point where this line intersects OA. Finally mark the point M′ on OB such that OM′ = L′P. Now consider the production plan which consists of using Process A at level OL′ and Process B at level OM′.[2] It is easy to show that this production plan uses OU units of labor, where U is the labor coordinate of point P, and OV units of capital, where V is the capital coordinate of point P.[3]

Since the coordinates of point P correspond to the quantities of factors consumed by OL′ units of Process A and OM′ units of Process B, we interpret P as representing the combined production plan made up of the specified levels of the two processes. This interpretation implies an important economic assumption, namely, that if the two processes are used simultaneously they will neither interfere with nor enhance each other so that the inputs and outputs resulting from simultaneous use of two processes at any levels can be found by adding the inputs and outputs of the individual processes.

In order to show that P lies on the isoquant through points L and M it remains only to show that the sum of the outputs corresponding to points L′ and M′ is the same as the output corresponding to point L or point M. This follows at once from the facts that the output corresponding to any point on a process ray is directly proportional to the length of the ray up to that point and that the triangles LL′P and LOM in Figure 4 are similar.[4] Thus if we have two process lines like OA and OB and find points L and M on them which represent producing the same output by means of the two processes then the line segment connecting the two equal-output points will be an isoquant.

We can now draw the mathematical programming analog of the familiar isoquant diagram. Figure 5 is such a diagram with four process lines shown. Point M represents a particular output by use of Process A and points L, K, J represent that same output by means of Processes B, C, D, respectively. The succession of line segments connecting these

[2] An alternative construction would be to draw a line through point P parallel to OA. It would intersect OB at M′. Then we could lay off OL′ equal to M′P on OA. This would lead to exactly the same results as the construction used in the text. The situation is analogous to the "parallelogram of forces" in physics.

[3] Proof: Process A at level OL′ uses OQ′ units of labor, Process B at level OM′ uses OS′ units of labor, together they use OQ′ + OS′ units of labor. But, by construction, L′P is equal and parallel to OM′. So Q′U = OS′. Therefore, OQ′ + OS′ = OQ′ + Q′U = OU units of labor. The argument with respect to capital is similar.

[4] Proof: Let Output (X) denote the output corresponding to any point X, on the diagram. Then Output (M′)/Output (M) = OM′/OM and Output (L′)/Output (L) = OL′/OL. By assumption: Output (L) = Output (M). So Output (M′)/Output (L) = OM′/OM. Adding, we have:

$$\frac{\text{Output }(M') + \text{Output }(L')}{\text{Output }(L)} = \frac{OM'}{OM} + \frac{OL'}{OL} = \frac{L'P}{OM} + \frac{OL'}{OL} = \frac{L'L}{OL} + \frac{OL'}{OL} = 1.$$

four points is the isoquant for that same output. It is easy to see that any other succession of line segments respectively parallel to those of MLKJ is also an isoquant. Three such are shown in the figure. It is instructive to compare Figure 5 with Figure 2 and note the strong resemblance in appearance as well as in interpretation.

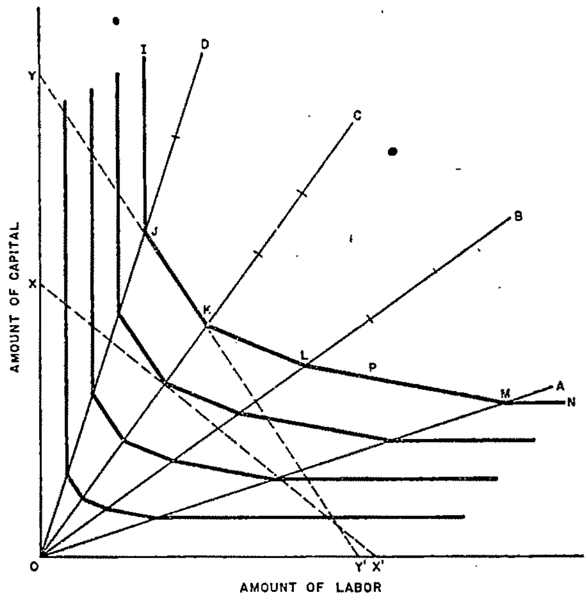

FIGURE 5. FOUR PROCESSES

We may draw price lines on Figure 5, just as on the conventional kind of isoquant diagram. The dashed lines XX′ and YY′ represent two possible price lines. Consider XX′ first. As that line is drawn, the maximum output for a given expenditure can be obtained by use of Process C alone, and, conversely, the minimum cost for a given output is also obtained by using Process C alone. Thus, for the relative price regime represented by XX′, Process C is optimal. The price line YY′ is drawn parallel to the isoquant segment JK. In this case Process C is still optimal, but Process D is also optimal and so is any combination of the two.

It is evident from considering these two price lines, and as many others as the reader wishes to visualize, that an optimal production program can always be achieved by means of a single process, which process depending, of course, on the slope of the price line. It should be noted, however, that the conventional tangency criterion is no longer applicable.

We found in Figure 5 that an optimal economic plan need never use

more than a single process for each of its outputs.[5] That conclusion is valid for the situation depicted, which assumed that the services of the two factors could be procured in any amounts desired at constant relative prices. This assumption is not applicable to many economic problems, nor is it used much in mathematical programming. We must now, therefore, take factor supply conditions into account.

III. *Factor Supplies and Costs*

In mathematical programming it is usual to divide all factors of production into two classes: unlimited factors, which are available in any amount desired at constant unit cost, and limited or scarce factors, which are obtainable at constant unit cost up to a fixed maximum quantity and thereafter not at all. The automobile example illustrates this classification. There the four types of capacity were treated as fixed factors available at zero variable cost; all other factors were grouped under direct costs which were considered as constant per unit of output.

The automobile example showed that this classification of factors is adequate for expressing the maximization problem of a firm dealing in competitive markets. In the last section we saw that when all factors are unlimited, this formulation can be used to find a minimum average cost point.

Both of these applications invoked restrictive assumptions and, furthermore, assumptions which conflict with those conventionally made in studying resource allocation. In conventional analysis we conceive that as the level of production of a firm, industry or economy rises, average unit costs rise also after some point. The increase in average costs is attributable in part to the working of the law of variable proportions,[6] which operates when the inputs of some but not all factors of production are increased. As far as the consequences of increasing some but not all inputs are concerned, the contrast between mathematical programming and the marginal analysis is more verbal than substantive. A reference to Figure 4 will show how such changes are handled in mathematical programming. Point J in Figure 4 represents the production of a certain output by the use of Process A alone. If it is desired to increase output without increasing the use of capital, this can be done by moving to the right along the dotted line JK, since this line cuts successively higher isoquants. Such a movement would correspond to using increasingly more of Process B and increasingly

[5] Recall, however, that we have not taken joint production into account nor have we considered the effects of considerations from the demand side.

[6] *Cf.* J. M. Cassels, "On the Law of Variable Proportions," in W. Fellner and B. F. Haley, eds., *Readings in the Theory of Income Distribution* (Philadelphia, 1946), pp. 103-18.

less of Process A and thus, indirectly, to substituting labor for capital. If, further, we assume that unit cost of production is lower for Process A than for Process B this movement would also correspond to increasing average cost of production. Thus both marginal analysis and mathematical programming lead to the same conclusion when factor proportions are changed: if the change starts from a minimum cost point the substitution will lead to gradually increasing unit costs.

But changing input proportions is only one part of the story according to the conventional type of analysis. If output is to be increased, any of three things may happen. First, it may be possible to increase the consumption of all inputs without incurring a change in their unit prices. In this case both mathematical programming and marginal analysis agree that output will be expanded without changing the ratios among the input quantities and average cost of production will not increase.[7] Second, it may not be possible to increase the use of some of the inputs. This is the case we have just analyzed. According to both modes of analysis the input ratios will change in this case and average unit costs will increase. The only difference between the two approaches is that if average cost is to be plotted against output, the marginal analyst will show a picture with a smoothly rising curve while the mathematical programmer will show a broken line made up of increasingly steep line segments. Third, it may be possible to increase the quantities of all inputs but only at the penalty of increasing unit prices or some kind of diseconomies of scale. This third case occurs in the marginal analysis, indeed it is the case which gives long-run cost curves their familiar shape, but mathematical programming has no counterpart for it.

The essential substantive difference we have arrived at is that the marginal analysis conceives of pecuniary and technical diseconomies associated with changes in scale while mathematical programming does not.[8] There are many important economic problems in which factor prices and productivities do not change in response to changes in scale or in which such variations can be disregarded. Most investigations of industrial capacity, for example, are of this nature. In such studies we seek the maximum output of an industry, regarding its inventory of physical equipment as given and assuming that the auxiliary factors needed to cooperate with the equipment can be obtained in the quanti-

[7] *Cf.* F. H. Knight, *Risk, Uncertainty and Profit* (Boston, 1921), p. 98.

[8] Even within the framework of the marginal analysis the concept of diseconomies of scale has been challenged on both theoretical and empirical grounds. For examples of empirical criticism see Committee on Price Determination, Conference on Price Research, *Cost Behavior and Price Policy* (New York, 1943). The most searching theoretical criticism is in Piero Sraffa, "The Laws of Returns under Competitive Conditions," *Econ. Jour.*, Dec. 1926, XXXVI, 535-50.

ties dictated by the characteristics of the equipment. Manpower requirement studies are of the same nature. In such studies we take both output and equipment as given and calculate the manpower needed to operate the equipment at the level which will yield the desired output. Studies of full employment output fall into the same format. In such studies we determine in advance the quantity of each factor which is to be regarded as full employment of that factor. Then we calculate the optimum output obtainable by the use of the factors in those quantities.

These illustrations should suffice to show that the assumptions made in mathematical programming can comprehend a wide variety of important economic problems. The most useful applications of mathematical programming are probably to problems of the types just described, that is, to problems concerned with finding optimum production plans using specified quantities of some or all of the resources involved.

IV. *Analysis of Production with Limited Factors*

The diagrams which we have developed are readily adaptable to the analysis of the consequences of limits on the factor supplies. Such limits are, of course, the heart of Figure 1 where the four principal lines represent limitations on the process levels which result from limits on the four factor quantities considered. But Figure 1 cannot be used when more than two processes have to be considered. For such problems diagrams like Figures 3, 4, and 5 have to be used.

Figure 6 reproduces the situation portrayed in Figure 5 with some

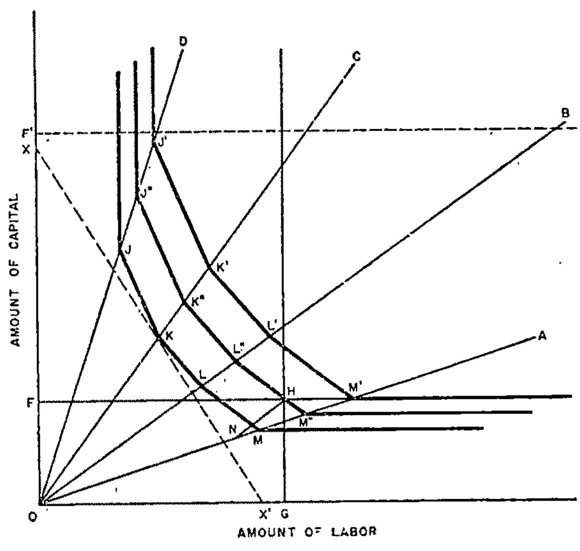

FIGURE 6. FOUR PROCESSES, WITH LIMITATIONS

additional data to be explained below. Let OF represent the maximum amount of capital which can be used and thus show a factor limitation. The horizontal line through F divides the diagram into two sections: all points above the line correspond to programs which require more capital than is available; points on and below the line represent programs which do not have excessive capital requirements. This horizontal line will be called the capital limitation line. Points on or below it are called "feasible," points above it are called "infeasible."

The economic unit portrayed in Figure 6 has the choice of operating at any feasible point. If maximum output is its objective, it will choose a point which lies on the highest possible isoquant, *i.e.*, the highest isoquant which touches the capital limitation line. This is the one labelled J′K′L′M′, and the highest possible output is attained by using Process A.

Of course, maximum output may not be the objective. The objective may be, for example, to maximize the excess of the value of output over labor costs. We shall refer to such an excess as a "net value." The same kind of diagram can be used to solve for a net value provided that the value of each unit of output is independent of the number of units produced[9] and that the cost of each unit of labor is similarly constant. If these provisos are met, each point on a process ray will correspond to a certain physical output but also to a certain value of output, cost of labor, and net value of output. Further, along any process ray the net value of output will equal the physical output times the net value per unit and will therefore be proportional to the physical output. We may thus use a diagram similar to Figure 6 except that we think of net value instead of physical output as measured along the process rays and we show isovalue line instead of isoquants. This has been done on Figure 7, in which the maximum net value attainable is the one which corresponds to the isovalue contour through point P, and is attained by using Process C.

It should be noted in both Figures 6 and 7 that the optimal program consisted of a single process, that shifts in the quantity of capital available would not affect the designation of the optimal process though they would change its level, and that the price lines, which were crucial in Figure 5, played no rôle.

The next complication, and the last one we shall be able to consider, is to assume that both factors are in limited supply. This situation is portrayed in Figure 6 by adding the vertical line through point G to represent a labor limitation. The available quantity of labor is shown, of course, by the length OG. Then the points inside the rectangle

[9] This is a particularly uncomfortable assumption. We use it here to explain the method in its least complicated form.

OFHG represent programs which can be implemented in the sense that they do not require more than the available supplies of either factor. This is the rectangle of feasible programs. The greatest achievable output is the one which corresponds to the highest isoquant which touches the rectangle of feasible programs. This is the isoquant J″K″L″M″, and furthermore, since the maximum isoquant touches the rectangle at H, H represents the program by which the maximum output can be produced.

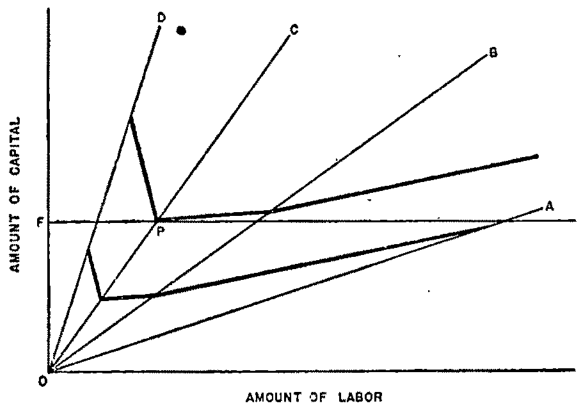

FIGURE 7. FOUR PROCESSES WITH ISOVALUE LINES

This solution differs from the previous ones in that the solution-point does not lie on any process ray but between the rays for Processes A and B. We have already seen that a point like H represents using Process A at level ON and Process B at level NH.

Two remarks are relevant to this solution. First: with the factor limitation lines as drawn, the maximum output requires two processes. If the factor limitation lines had been drawn so that they intersected exactly on one of the process rays, only one process would have been required. If the factor limitation lines had crossed to the left of Process D or to the right of Process A, the maximizing production plan would require only one process. But, no matter how the limitation lines be drawn, at most two processes are required to maximize output. We are led to an important generalization: maximum output may always be obtained by using a number of processes which does not exceed the number of factors in limited supply, if this number is greater than zero. The conclusions we drew from Figures 6 and 7 both conform to this rule, and it is one of the basic theorems of mathematical programming.

Second: although at most two processes are required to obtain the maximum output, which two depends on the location of the factor limits. As shown, the processes used for maximum output were Proces-

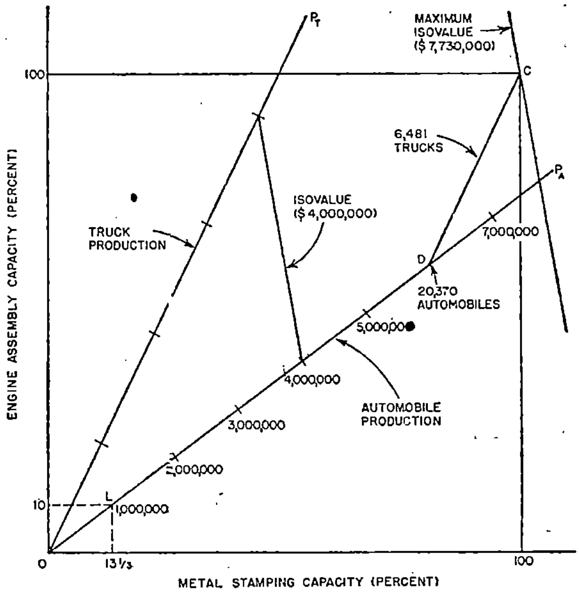

FIGURE 8. AUTOMOBILE EXAMPLE, OPTIMAL PLAN

ses A and B. If somewhat more capital, represented by the amount OF′, were available, the maximizing processes would have been Processes C and D. If two factors are limited, it is the ratio between their supplies rather than the absolute supplies of either which determines the processes in the optimum program. This contrasts with the case in which only one factor is limited. Just as the considerations which determine the optimum set of processes are more complicated when two factors are limited than when only one is, so with three or more limited factors the optimum conditions become more complicated still and soon pass the reach of intuition. This, indeed, is the *raison d'être* of the formidable apparatus of mathematical programming.

We can make these considerations more concrete by applying them to the automobile example. Referring to Figure 1, (p. 799), we note that the optimum production point, C, lay on the limitation lines for engine assembly and metal stamping, but well below the limits for automobile and truck assembly. The limitations on automobile and truck assembly capacity are, therefore, ineffective and can be disregarded. The situation in terms of the two effectively limiting types of capacity is shown in Figure 8.

In Figure 8 the ray P_A represents the process of producing automobiles and P_T the process of producing trucks. These two processes can be operated at any combination of levels which does not require the use of more than 100 per cent of either metal stamping or engine assembly

capacity. Thus the rectangle in the diagram is the region of feasible production programs. The optimal production program is the one in the feasible region which corresponds to the highest possible net revenue.[10] Thus it will be helpful to construct isorevenue lines, as we did in Figure 7. To do this, consider automobile production first. Each point on P_A corresponds to the production of a certain number of automobiles per month. Suppose, for example, that the scale is such that point L represents the production of 3,333 automobiles per month. It will be recalled that each automobile yields a net revenue of $300. Therefore, 3,333 automobiles yield a revenue of $1,000,000. Point L, then, corresponds to a net revenue of $1,000,000 as well as to an output of 3,333 automobiles per month. Since (see page 799), 3,333 automobiles require 13⅓ per cent of metal stamping capacity and 10 per cent of engine assembly capacity, the coordinates of the $1,000,000 net revenue point on P_A are established at once. By a similar argument, the point whose coordinates are 26⅔ per cent of metal stamping capacity and 20 per cent of engine capacity is the $2,000,000 net revenue point on P_A. In the same manner, the whole ray can be drawn and scaled off in terms of net revenue, and so can P_T, the process ray for truck production. The diagram is completed by connecting the $4,000,000 points on the two process lines in order to show the direction of the isorevenue lines.

The optimum program is at point C, where the two capacity limits intersect, because C lies on the highest isorevenue line which touches the feasible region. Through point C we have drawn a line parallel to the truck production line and meeting the automobile production line at D. By our previous argument, the length OD represents the net revenue from automobile production in the optimal program and the length DC represents the net revenue from trucks. If these lengths be scaled off, the result, of course, will be the same as the solution found previously.

V. *Imputation of Factor Values*

We have just noted that the major field of application of mathematical programming is to problems where the supply of one or more factors of production is absolutely limited. Such scarcities are the genesis of value in ordinary analysis, and they generate values in mathematical programming too. In fact, in ordinary analysis the determination of outputs and the determination of prices are but two aspects of the same problem, the optimal allocation of scarce resources. The same is true in mathematical programming.

[10] Since the objective of the firm is, by assumption, to maximize revenue rather than physical output, we may consider automobile and truck production as two alternative processes for producing revenue instead of as two processes with disparate outputs.

Heretofore we have encountered prices only as data for determining the direct costs of processes and the net value of output. But of course the limiting factors of production also have value although we have not assigned prices to them up to now. In this section we shall see that the solution of a mathematical programming problem implicitly assigns values to the limiting factors of production. Furthermore, the implicit pricing problem can be solved directly and, when so solved, constitutes a solution to the optimal allocation problem.

Consider the automobile example and ask: how much is a unit (1 per cent) of each of the types of capacity worth to the firm? The approach to this question is similar in spirit to the familiar marginal analysis. With respect to each type of capacity we calculate how much the maximum revenue would increase if one more unit were added, or how much revenue would decrease if one unit were taken away. Since there is a surplus of automobile assembly capacity, neither the addition nor the subtraction of one unit of this type would affect the optimum program or the maximum net revenue. Hence the value of this type of capacity is nil. The analysis and result for truck assembly are the same.

We find, then, that these two types of capacity are free goods. This does not imply that an automobile assembly line is not worth having, any more than, to take a classic example, the fact that air is a free good means that it can be dispensed with. It means that it would not be worth while to increase this type of capacity at any positive price and that some units of these types could be disposed of without loss.

The valuation of the other types of capacity is not so trivial. In Figure 9 possible values per per cent of engine assembly capacity are scaled along the horizontal axis and values per per cent of metal stamping capacity are scaled along the vertical axis. Now consider any possible pair of values, say engine assembly capacity worth \$20,000 per unit and metal stamping worth \$40,000. This is represented by point A on the figure. Applying these values to the data on pages 798-99, the values of capacity required for producing an automobile is found to be: $(0.004 \times \$40{,}000) + (0.003 \times \$20{,}000) = \$220$ which is well under the value of producing an automobile, or \$300.[11] In the same way, if engine assembly capacity is worth \$60,000 per per cent of capacity and metal stamping capacity is valued at \$30,000 per unit (point B), the cost of scarce resources required to produce an automobile will be exactly equal to the value of the product. This is clearly not the only combination of resource values which will precisely absorb the value of output when the resources are used to produce automobiles. The automobile production line in the figure, which passes through point B, is

[11] These unit values are also marginal values since costs of production are constant.

the locus of all such value combinations. A similar line has been drawn for truck production to represent those combinations of resource values for which the total value of resources used in producing trucks is equal to the value of output. The intersection of these two lines is obviously the only pair of resource values for which the marginal resource cost of producing an additional automobile is equal to the net value of an automobile and the same is true with respect to trucks. The pair can be found by plotting or, with more precision, by algebra. It is found that 1 per cent of engine assembly capacity is worth $9,259 and 1 per cent of metal stamping capacity is worth $68,056.

To each pair of values for the two types of capacity, there corresponds a value for the entire plant. Thus to the pair of values represented by point A there corresponds the plant value of (100 × $20,000) + (100 × $40,000) = $6,000,000. This is not the only pair of resource values which give an aggregate plant value of $6,000,000. Indeed, any pair of resource values on the dotted line through A corresponds to the same aggregate plant value. (By this stage, Figure 9 should become strongly reminiscent of Figure 1, page 799.) We have drawn a number of dotted lines parallel to the one just described, each corresponding to a specific aggregate plant value. The dotted line which passes through the intersection of the two production lines is of particular interest. By measurement or otherwise this line can be found to correspond to a plant value of $7,731,500 which, we recall, was found to be the maximum attainable net revenue.

Let us consider the implications of assigning values to the two limiting factors from a slightly different angle. We have seen that as soon as unit values have been assigned to the factors an aggregate value is assigned to the plant. We can make the aggregate plant value as low as we please, simply by assigning sufficiently low values to the various factors. But if the values assigned are too low, we have the unsatisfactory consequence that some of the processes will give rise to unimputed surpluses. We may, therefore, seek the lowest aggregate plant value which can be assigned and still have no process yield an unimputed surplus. In the automobile case, that value is $7,731,500. In the course of finding the lowest acceptable plant value we find specific unit values to be assigned to each of the resources.

In this example there are two processes and four limited resources. It turns out that only two of the resources were effectivly limiting, the others being in relatively ample supply. In general, the characteristics of the solution to a programming problem depend on the relationship between the number of limited resources and the number of processes taken into consideration. If, as in the present instance, the number of limited resources exceeds the number of processes it will usually turn

out that some of the resources will have imputed values of zero and that the number of resources with positive imputed values will be equal to the number of processes.[12] If the number of limited resources equals the number of processes all resources will have positive imputed values. If, finally, the number of processes exceeds the number of limited resources, some of the processes will not be used in the optimal program. This situation, which is the usual one, was illustrated in Figure 6. In this case the total imputed value of resources absorbed will equal net revenue for some processes and will exceed it for others. The number of

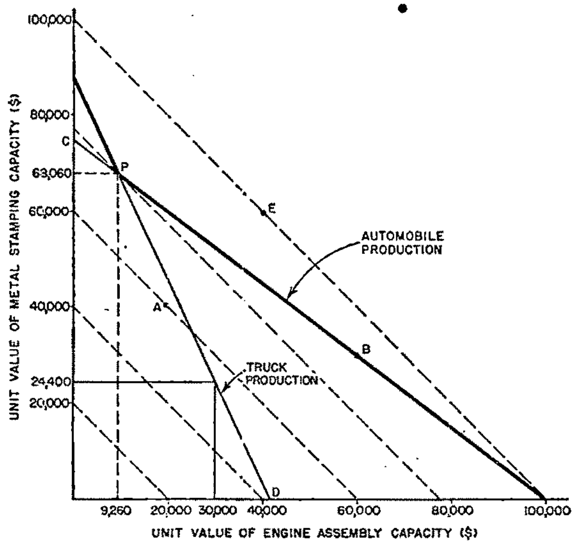

FIGURE 9. AUTOMOBILE EXAMPLE, IMPLICIT VALUES

processes for which the imputed value of resources absorbed equals the net revenue will be just equal to the number of limited resources and the processes for which the equality holds are the ones which will appear at positive levels in the optimal program. In brief, the determination of the minimum acceptable plant value amounts to the same thing as the determination of the optimal production program. The programming problem and the valuation problem are not only closely related, they are basically the same.

This can be seen graphically by comparing Figures 1 and 9. Each figure contains two axes and two diagonal boundary lines. But the boundary lines in Figure 9 refer to the same processes as the axes in Figure 1, and the axes in Figure 9 refer to the same resources as the

[12] We say "usually" in this sentence because in some special circumstances the number of resources with positive imputed values may exceed the number of processes.

diagonal boundary lines in Figure 1. Furthermore, in using Figure 1 we sought the net revenue corresponding to the highest dashed line touched by the boundary; in using Figure 9 we sought the aggregate value corresponding to the lowest dashed line which has any points on or outside the boundary; and the two results turned out to be the same. Formally stated, these two figures and the problems they represent are *duals* of each other.

The dualism feature is a very useful property in the solution of mathematical programming problems. The simplest way to see this is to note that when confronting a mathematical programming problem we have the choice of solving the problem or its dual, whichever is easier. Either way we can get the same results. We can use this feature now to generalize our discussion somewhat. Up to now when dealing with more than two processes we have had to use relatively complicated

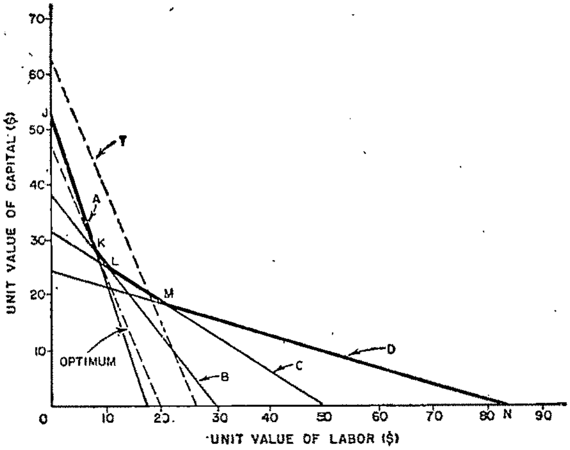

FIGURE 10. THE VALUATION PROBLEM, FOUR PROCESSES

diagrams like Figure 6 because straightforward diagrams like Figure 1 did not contain enough axes to represent the levels of the processes. Now we can use diagrams modeled on Figure 9 to depict problems with any number of processes so long as they do not involve more than two scarce factors. Figure 10 illustrates a diagram for four processes and is, indeed, derived from Figure 6. In Figure 10 line A represents all pairs of factor values such that Process A would yield neither a profit nor a loss. Lines B, C, and D are similarly interpreted. The dashed line T is a locus along which the aggregate value of the labor and capital available to the firm (or industry) is constant. Its position is not relevant to the analysis; its slope, which is simply the ratio of the quantity of available labor to that of capital, is all that is significant. The broken

line JKLMN divides the graph into two regions. All points on or above it represent pairs of resource values such that no process gives rise to an unimputed surplus. Let us call this the acceptable region. For each point below that broken line there is at least one process which does have an unimputed surplus. This is the unacceptable region. We then seek for that point in the acceptable region which corresponds to the lowest aggregate plant value. This point will, of course, give the set of resource values which makes the accounting profit of the firm as great as possible without giving rise to any unimputed income. The point which meets these requirements is K, and a dotted line parallel to T has been drawn through it to indicate the minimum acceptable aggregate plant value.

At point K Processes A and B yield zero profits, and Processes C and D yield losses. Hence Processes A and B are the ones which should be used, exactly as we found in Figure 6. To be sure, this diagram does not tell the levels at which A and B should be used, any more than Figure 6 tells the valuations to be placed on the two resources. But finding the levels after the processes have been selected is a comparatively trivial matter. All that is necessary is to find the levels which will fully utilize the resources which are not free goods. This may be done algebraically or by means of a diagram like Figure 8.

VI. *Applications*

In the first section we asserted that the principal motivation of mathematical programming was the need for a method of analysis which lent itself to the practical solution of the day-to-day problems of business and the economy in general. Immediately after making that claim we introduced a highly artificial problem followed by a rather extended discussion of abstract and formal relationships. The time has now come to indicate the basis for saying that mathematical programming is a practical method of analysis.

The essential simplification achieved in mathematical programming is the replacement of the notion of the production function by the notion of the process. The process is a highly observable unit of activity and the empirical constants which characterize it can be estimated without elaborate analysis. Furthermore in many industries the structure of production corresponds to operating a succession of processes, as we have conceived them. Many industrial decisions, like shutting down a bank of machines or operating an extra shift, correspond naturally to our concept of choosing the level of operation of a process. In brief, mathematical programming is modelled after the actual structure of production in the hope that thereby it will involve only observable

constants and directly controllable variables.

Has this hope been justified? The literature already contains a report of a successful application to petroleum refining.[13] I have made a similar application which, perhaps, will bear description. The application was to a moderate-sized refinery which produces premium and regular grades of automotive gasoline. The essential operation studied was blending. In blending, ten chemically distinct kinds of semirefined oil, called blending stocks, are mixed together. The result is a saleable gasoline whose characteristics are approximately the weighted average of the characteristics of the blending stocks. For example, if 500 gallons of a stock with octane rating of 80 are blended with 1,000 gallons of a stock with octane rating of 86 the result will be $500 + 1{,}000 = 1{,}500$ gallons of product with octane rating of $(\frac{1}{3} \times 80) + (\frac{2}{3} \times 86) = 84$.

The significant aspect of gasoline blending for our present purposes is that the major characteristics of the blend—its knock rating, its vapor pressure, its sulphur content, etc.—can be expressed as linear functions of the quantities of the various blending stocks used. So also can the cost of the blend if each of the blending stocks has a definite price per gallon. Thus the problem of finding the minimum cost blend which will meet given quality specifications is a problem in mathematical programming.

Furthermore, in this refinery the quantities of some of the blending stocks are definitely limited by contracts and by refining capacity. The problem then arises: what are the most profitable quantities of output of regular and premium gasoline, and how much of each blending stock should be used for each final product. This problem is analogous to the artificial automobile example, with the added complication of the quality specifications. The problem is too complicated for graphic analysis but was solved easily by arithmetical procedures. As far as is known, mathematical programming provides the only way for solving such problems. Charnes and Cooper have recently published the solution to a similar problem which arose in the operations of a metalworking firm.[14]

An entirely different kind of problem, also amenable to mathematical programming, arises in newsprint production. Freight is a major element in the cost of newsprint. One large newsprint company has six mills, widely scattered in Canada, and some two hundred customers, widely scattered in the United States. Its problem is to decide how much

[13] A. Charnes, W. W. Cooper and B. Mellon, "Blending Aviation Gasolines," *Econometrica* Apr. 1952, XX, 135-59.

[14] A. Charnes, W. W. Cooper, and Donald Farr and Staff, "Linear Programming and Profit Preference Scheduling for a Manufacturing Firm," *Jour. Operations Research Society of America,* May 1953, I, 114-29.

newsprint to ship from each mill to each customer so as, first, to meet the contract requirements of each customer, second, to stay within the capacity limits of each mill, and third, to keep the aggregate freight bill as small as possible. This problem involves 1,200 variables (6 mills $\times$ 200 customers), in contrast to the two or four variable problems we have been discussing. In the final solution most of these variables will turn out to be zero—the question is which ones. This problem is solved by mathematical programming and, though formidable, is not really as formidable as the count of variables might indicate.

These few illustrations should suffice to indicate that mathematical programming is a practical tool for business planning. They show, also, that it is a flexible tool because both examples deviated from the format of the example used in our exposition. The petroleum application had the added feature of quality specification. In the newsprint application there were limits on the quantity of output as well as on the quantities of the inputs. Nevertheless mathematical programming handled them both easily.

On the other hand, it should be noted that both of these were small-scale applications, dealing with a single phase of the operation of a single firm. I believe that this has been true of all successful applications to date. Mathematical programmers are still a long way from solving the broad planning problem of entire industries or an entire economy. But many such broad problems are only enlarged versions of problems which have been met and solved in the context of the single firm. It is no longer premature to say that mathematical programming has proved its worth as a practical tool for finding optimal economic programs.

VII. *Conclusion*

Our objective has been only to introduce the basic notions of mathematical programming and to invest them with plausibility and meaning. The reader who would learn to solve a programming problem—even the simplest—will have to look elsewhere,[15] though this paper may serve as a useful background.

Although methods of solution have been omitted from this exposition, we must emphasize that these methods are fundamental to the whole concept of mathematical programming. Some eighty years ago Walras conceived of production in very much the same manner as mathematical

[15] The standard reference is T. C. Koopmans, ed., *Activity Analysis of Production and Allocation* (New York, 1951). Less advanced treatments may be found in A. Charnes, W. W. Cooper, and A. Henderson, *An Introduction to Linear Programming* (New York, 1953); and my own *Application of Linear Programming to the Theory of the Firm* (Berkeley, 1951).

programmers, and more recently A. Wald and J. von Neumann used this view of production and methods closely allied to those of mathematical programming to analyze the conditions of general economic equilibrium.[16] These developments, however, must be regarded merely as precursors of mathematical programming. Programming had no independent existence as a mode of economic analysis until 1947 when G. B. Dantzig announced the "simplex method" of solution which made practical application feasible.[17] The existence of a method whereby economic optima could be explicitly calculated stimulated research into the economic interpretation of mathematical programming and led also to the development of alternative methods of solution. The fact that economic and business problems when formulated in terms of mathematical programming can be solved numerically is the basis of the importance of the method. The omission of methods of solution from this discussion should not, therefore, be taken to indicate that they are of secondary interest.

We have considered only a few of the concepts used in mathematical programming and have dealt with only a single type of programming problem. The few notions we have considered, however, are the basic ones; all the rest of mathematical programming is elaboration and extension of them. It seems advisable to mention two directions of elaboration, for they remove or weaken two of the most restrictive assumptions which have here been imposed.

The first of these extensions is the introduction of time into the analysis. The present treatment has dealt with a single production period in isolation. But in many cases, successive production periods are interrelated. This is so, for example, in the case of a vertically integrated firm where the operation of some processes in one period is limited by the levels of operation in the preceding period of the processes which supply their raw materials. Efficient methods for analyzing such "dynamic" problems are being investigated, particularly by George Dantzig.[18] Although the present discussion has been static, the method of analysis can be applied to problems with a time dimension.

[16] Walras' formulation is in *Éléments d'économie politique pure ou théorie de la richesse sociale,* 2d ed. (Lausanne, 1889), 20^e Leçon. The contributions of A. Wald and J. von Neumann appeared originally in *Ergebnisse eines mathematischen Kolloquiums,* Nos. 6, 7, 8. Wald's least technical paper appeared in *Zeitschrift für Nationalökonomie,* VII (1936) and has been translated as "On some Systems of Equations of Mathematical Economics," *Econometrica,* Oct. 1951, XIX, 368-403. Von Neumann's basic paper appeared in translation as "A Model of General Economic Equilibrium," *Rev. Econ. Stud.,* 1945-46, XIII, 1-9.

[17] G. B. Dantzig, "Maximization of a Linear Function of Variables Subject to Linear Inequalities," T. C. Koopmans, ed., *op. cit.,* pp. 339-47.

[18] "A Note on a Dynamic Leontief Model with Substitution" (abstract), *Econometrica,* Jan. 1953, XXI, 179.

The second of these extensions is the allowance for changes in the prices of factors and final products. In our discussion we regarded all prices as unalterable and independent of the actions of the economic unit under consideration. Constant prices are, undeniably, a great convenience to the analyst, but the method can transcend this assumption when necessary. The general mathematical theory of dealing with variable prices has been investigated[19] and practical methods of solution have been developed for problems where the demand and supply curves are linear.[20] The assumption of constant prices, perhaps the most restrictive assumption we have made, is adopted for convenience rather than from necessity.

Mathematical programming has been developed as a tool for economic and business planning and not primarily for the descriptive, and therefore predictive, purposes which gave rise to the marginal analysis. Nevertheless it does have predictive implications. In so far as firms operate under the conditions assumed in mathematical programming it would be unreasonable to assume that they acted as if they operated under the conditions assumed by the marginal analysis. Consider, for example, the automobile firm portrayed in Figure 1. How would it respond if the price of automobiles were to fall, say by $50 a unit? In that case the net revenue per automobile would be $250, the same as the net revenue per truck. Diagrammatically, the result would be to rotate the lines of equal revenue until their slope was 45 degrees. After this rotation, point C would still be optimum and this change in prices would cause no change in optimum output. Mathematical programming gives rise, thus, to a kinked supply curve.

On the other hand, suppose that the price of automobiles were to rise by $50. Diagrammatically this price change would decrease the steepness of the equal revenue lines until they were just parallel to the metal stamping line. The firm would then be in a position like that illustrated by the YY′ line in Figure 5. The production plans corresponding to points on the line segment DC in Figure 1 would all yield the same net revenue and all would be optimal. If the prices of automobiles were to rise by more than $50 or if a $50 increase in the price of automobiles were accompanied by any decrease in the price of trucks, the point of optimal production would jump abruptly from point C to point D.

Thus mathematical programming indicates that firms whose choices

[19] See H. W. Kuhn and A. W. Tucker, "Non-Linear Programming," in J. Neyman, ed., *Proceedings of the Second Berkeley Symposium on Mathematical Statistics and Probability* (Berkeley, 1951), pp. 481-92.

[20] I reported one solution of this problem to a seminar at the Massachusetts Institute of Technology in September 1952. Other solutions may be known.

are limited to distinct processes will respond discontinuously to price variations: they will be insensitive to price changes over a certain range and will change their levels of output sharply as soon as that range is passed. This theoretical deduction surely has real counterparts.

The relationship between mathematical programming and welfare economics is especially close. Welfare economics studies the optimal organization of economic effort; so does mathematical programming. This relationship has been investigated especially by Koopmans and Samuelson.[21] The finding, generally stated, is that the equilibrium position of a perfectly competitive economy is the same as the optimal solution to the mathematical programming problem embodying the same data.

Mathematical programming is closely allied mathematically to the methods of input-output analysis or interindustry analysis developed largely by W. W. Leontief.[22] The two methods were developed independently, however, and it is important to distinguish them conceptually. Input-output analysis finds its application almost exclusively in the study of general economic equilibrium. It conceives of an economy as divided into a number of industrial sectors each of which is analogous to a process as the term is used in mathematical programming. It then takes either of two forms. In "open models" an input-output analysis starts with some specified final demand for the products of each of the sectors and calculates the level at which each of the sector-processes must operate in order to meet this schedule of final demands. In "closed models" final demand does not appear but attention is concentrated on the fact that the inputs required by each sector-process must be supplied as outputs by some other sector-processes. Input-output analysis then calculates a mutually compatible set of output levels for the various sectors. By contrast with mathematical programming the conditions imposed in input-output analysis are sufficient to determine the levels of the processes and there is no scope for finding an optimal solution or a set of "best" levels. To be sure, input-output analysis can be regarded as a special case of mathematical programming in which the number of products is equal to the number of processes. On the other hand, the limitations on the supplies of resources which play so important a rôle in mathematical programming are not dealt with explicitly in input-output analysis. On the whole it seems

[21] T. C. Koopmans, "Analysis of Production as an Efficient Combination of Activities," in T. C. Koopmans, ed., *op. cit.*, pp. 33-97; P. A. Samuelson, "Market Mechanisms and Maximization" (a paper prepared for the Rand Corp., 1949).

[22] W. W. Leontief, *The Structure of American Economy 1919-1939*, 2nd. ed. (New York, 1951).

best to regard these two techniques as allied but distinct methods of analysis addressed to different problems.)

Mathematical programming, then, is of significance for economic thinking and theory as well as for business and economic planning. We have been able only to allude to this significance. Indeed, apart from the exploration of welfare implications, very little thought has been given to the consequences for economics of mathematical programming because most effort has been devoted to solving the numerous practical problems to which it gives rise. The outlook is for fruitful researches into both the implications and applications of mathematical programming.

VERTICAL EQUILIBRIUM UNDER PURE QUALITY COMPETITION

By LAWRENCE ABBOTT*

The customary approach to equilibrium analysis is through the construction of a "pure" model consisting of a simplified market situation in which competing sellers offer products whose quality is uniform and unchanging, so that equilibrating adjustments are restricted to changes in price and output. The usefulness of such a model lies in the fact that, by ruling out both quality variability and imperfect substitution, the analyst is able to abstract completely from the quality element in exchange, and can therefore obtain the clearest possible picture of the price variable.

This so-called "purely competitive" situation, however, is not the only pure type of competitive market. Another "pure" and "competitive" model precisely the reverse of the one just described may be set up, in which the *price* of all competing goods in the market is uniform and unchanging, while quality is freely variable, so that adjustments are restricted to changes in product quality—with, of course, corresponding changes in output. To distinguish such a situation from its more familiar counterpart, we shall find it convenient to label it *pure quality competition*. The term *pure price competition* can then be used to describe the opposite ("purely competitive") situation, in which the price variable operates in isolation.

This second "pure" model is, of course, neither new nor unfamiliar. Chamberlin's path-breaking analysis of "product equilibrium" in *The Theory of Monopolistic Competition* employed this very model. But despite the highly suggestive character of that analysis, the study of quality competition as an equilibrating process has remained a neglected area of economic theory.[1]

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[1] Analyses of spatial competition by Hotelling, Smithies and others have thrown some light on the subject, but are restricted to only one aspect of quality competition. A recent analysis of product competition in the broadcasting industry by Peter O. Steiner, employing a different technique in dealing with the same general problem, offers interesting possibilities for analysis of quality competition; yet Steiner's model likewise treats quality variability in only a limited way, since variation is confined to choice between "types" of radio programs (quiz show, comedy program, etc.), within each of which quality variation is implicitly assumed to be nil or of no effect on listener preference ("Program Patterns

Yet the limiting case of "pure quality competition" is surely of great importance. Markets which approximate it—characterized by price rigidity or stickiness and by products which are not fixed in quality—form a substantial fraction of today's economy. Analysis of "pure quality competition" is also important because it provides an analytical device of great usefulness in the study of free markets in general. By stilling the movements of price, we are enabled to observe with greater clarity the kinds of behavior and adjustment *other than price and output changes* which are found in markets where both products and prices are free to vary. These kinds of behavior are especially significant in the many markets in which prices, although not completely rigid, move sluggishly.

This paper is an attempt to provide a theoretical framework in which this important but neglected aspect of competition can be usefully studied. Its specific objective is to determine the conditions of equilibrium with respect to one aspect of quality only in a hypothetical single-fixed-price market in which quality is freely variable. Its scope is therefore severely limited. Nevertheless, it is hoped that the analysis will throw some light on the kinds of behavior and market structures that quality competition tends to produce, and may pave the way for the construction of more comprehensive theoretical models.

I. *Definitions of Terms*

The word *quality* will be used in its broadest sense, to describe any or all of the various qualitative characteristics of a physical product or service, or combination of the two, offered for sale. "Quality" thus includes materials, design, style, location of a retail outlet—in short, any and every qualitative attribute. Quality is therefore a multidimensional variable—a compound of numerous elements (*e.g.*, in a necktie: size, shape, type of construction, pattern, color scheme, material, texture, durability, resistance to wrinkling, color fastness), each of which is variable.

Quality competition will refer to producers' independent actions regarding the quality of their respective products, prompted by the desire to improve their positions, when such products are variable in quality and are offered in the same market.

The *market* is defined as embracing those products which are com-

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and Preferences, and the Workability of Competition in Radio Broadcasting," *Quart. Jour. Econ.*, May 1952, LXVI, 194-223). Another recent theoretical study of greater comprehensiveness is Hans Brems' *Product Equilibrium under Monopolistic Competition* (Cambridge, 1951), but this work contains no thoroughgoing analysis of the equilibrium positions of firms in markets where quality alone is variable.

petitive in the sense of being substitutable alternatives, each capable of serving some given purpose, or, let us say, performing some given function, or rendering some given service, or enabling its possessor to engage in some given activity. In other words, products will be considered to belong within the same market or industry if they can be regarded as variable means to some definable common end.[2]

For our purposes it will be convenient to distinguish three kinds of quality variability:

1. *Vertical*—the kind of quality change or comparison which may properly be described in terms of "higher" or "lower." Two things distinguish this kind: (a) the "superior" of any two qualities is considered preferable by virtually all buyers, and (b) it entails greater cost. Therefore an upward (or downward) vertical change in quality unaccompanied by a change in price gives the buyer more (or less) for his money than before.

Vertical differences in quality frequently consist of differences in the quantity of some desired ingredient or attribute: the metallic content of an ore, the tensile strength of steel wire, the mileage in an automobile tire. The simplest kind of vertical variation is a change in the size of the unit. With vertical differences it is appropriate to speak of one quality being "better" or of higher "grade" than another, of "cheap" versus "good" quality, and of "improvement" or "deterioration" of quality.

2. *Horizontal*—those differences about which there is no clear-cut agreement. Two things distinguish this type: (a) different people will rank dissimilar qualities in different orders, and (b) cost differences, if any, are purely incidental. The existence of this category depends on the fact that people differ in their circumstances, values, and tastes. With differences of this sort we may properly speak of one quality being "more suitable" or "more appealing" than another, but such a statement is meaningful only if made with reference to a particular buyer or group of buyers. The most obvious examples of horizontal differences are those that involve aesthetic considerations: color, texture, shape, styling. Unlike vertical quality, horizontal quality is of a sort that can become excessive (*e.g.*, the stiffness of the springs of a mat-

[2] While this may not be a wholly rigorous definition of a market's boundaries, it seems acceptable enough for our purposes, especially if employed with an admixture of common sense. We may think of the toilet soap market, for example, as including only those products which can be used in a bathroom to cleanse the skin. Similarly, the furnace or space-heating-equipment market is limited to those products which keep buildings warm in winter. Ruby T. Norris presents this concept of an industry in *The Theory of Consumer's Demand* (New Haven, 1941), pp. 78-79. See also James S. Duesenberry, *Income, Saving, and the Theory of Consumer Behavior* (Cambridge, Mass., 1949), p. 20.

tress, or the hardness of a soft-boiled egg). Horizontal differences are, as a rule, nonmeasurable.[3]

3. *Innovational*—the introduction of a novel quality which is judged superior by most or all buyers, and which either costs no more to produce or is well worth whatever additional cost is involved, so that the older quality must eventually become obsolete. This kind of quality change, associated with innovation and progress, leads to "improved" rather than "higher" quality. A new idea having universal or near-universal appeal (*e.g.*, the three-passenger front seat) or a technical improvement in design (*e.g.*, steel-shafted golf clubs) lie in this category. Here the superiority is not due to better materials or workmanship, nor does the change alter the grade or price class to which a product belongs, but rather creates quality differences and improvement within each grade. Innovational change in quality, if considered an improvement, eventually makes obsolete the previously accepted quality, whereas differences in vertical quality, being accompanied by cost and price differences, show no tendency to be eliminated.

Actual quality changes do not always fit neatly into one or another of these three categories. A change may be a hybrid, such as innovational-horizontal, or may contain elements of all three, or may be innovational with respect to some horizontal qualities but not with respect to others. The above classification is simply an analytical device, imperfect yet highly useful for detailed analysis of quality competition.

II. *The Principal Assumptions*

In analyzing quality equilibrium, simplifying assumptions are of course needed. Moreover, it seems desirable to reduce the complexity of our task by restricting our scrutiny for the present to one aspect of quality variation. In the model here developed three important simplifications will be made:

(1) Innovational variation will be ruled out. Although this exclusion is made with some reluctance, since quality adjustments in the real

[3] The fact that some qualities are neither "better" nor "worse" than others, but merely better suited to some people's wants (and less suited to others') seems so self-evident that the statement presented above may be deemed superfluous. Yet the idea needs emphasizing since economists have so frequently written as if all significant quality differences were of the vertical type. See for example Marshall, *Principles of Economics*, 8th ed. (London, 1920), pp. 100, 113; Stephen Enke, "Profit Maximization under Monopolistic Competition," *Am. Econ. Rev.*, June 1941, XXXI, p. 322; M. W. Reder, *Studies in the Theory of Welfare Economics* (New York, 1947), p. 74.

The related idea that quality differences always involve cost differences has also been expressed from time to time. See E. H. Chamberlin, *The Theory of Monopolistic Competition*, 5th ed. (Cambridge, Mass., 1946), p. 96; Joan Robinson, *The Economics of Imperfect Competition* (London, 1933), p. 90 n.

world are to a large extent innovational in character, to attempt to incorporate innovational changes in a model concerned with quality equilibrium would raise enormous analytical difficulties. Human ingenuity is capable of devising countless variations of products. Progress in science and technology opens up ever new opportunities for further variation. Even in an economy in which people's wants remain constant, the number of moves and countermoves needed for the achievement of quality equilibrium would seem to be indefinitely great. To make our analysis manageable, we must impose conditions under which equilibrium is conceptually attainable within a reasonably short period.

The assumption that no innovational variation in quality occurs does not rule out all pioneer quality changes; two sorts remain possible. A new quality may be selected "in between" the qualities of two variants already in existence. (If bicycles of 24-inch and 26-inch wheels are already being produced, producers are free to offer a 25-inch bicycle.) And in the typical case in which a product's quality is compounded of numerous variable elements, existing quality elements may be put together in new combinations.[4]

(2) Since it seems advisable for the sake of brevity to confine this essay in model-building to one kind of quality adjustment, the consequences of *horizontal* variability will be assumed rather than deduced from other assumptions.[5] Accordingly, the model constructed below will show only the equilibrating *vertical* quality adjustments made in a one-fixed-price market. The following set of assumptions about horizontal quality differences and adjustments will be made: (a) Each firm's product differs horizontally from every other and attracts its own group of buyers. (b) Buyers' preferences and producers' choices of horizontal quality are such that, in the absence of vertical quality differences, the demand for every variety is the same, and therefore all firms have equal outputs. (c) When firms enter or leave the industry, horizontal quality adjustments take place in such a way that the above condition continues to hold.

(3) Vertical variability will be restricted to a single dimension, and conceived to be of such a character that the possible varieties can be arranged in order, in an "array" or "spectrum." More specifically, it will be assumed that vertical quality is variable in only one respect, is continuously variable, and is such that for every level of quality there is

[4] See Norris, *op. cit.*, p. 187: "In most commodity clusters, by taking thought one can perceive numerous rearrangements of existing qualitative differences, which are not offered."

[5] In a more comprehensive study of pure quality competition it would certainly be desirable to deduce the step-by-step process of horizontal adaptation and the position of horizontal equilibrium under various hypothetical conditions, in order that firms' behavior with regard to horizontal variability be explained rather than merely assumed.

a different, and only one, corresponding cost function.

This restriction enables us to depict quality levels graphically by drawing their corresponding cost curves. In reality, of course, product quality is likely to consist of numerous variable components, both horizontal and vertical; in fact, it is the multidimensional character of quality that makes choice between quality alternatives so much more difficult than choice between price alternatives. But when a product is vertically variable in several respects, the level of quality is conceivable only as some kind of average of the levels of the various vertical quality components, and the relationship between cost and vertical quality is obscure. The above simplification removes this difficulty.

Assumptions are also needed with regard to the way in which vertical quality variation affects demand. Two situations must be distinguished: one, in which vertical quality changes are made by all firms in unison; and the other, in which one firm raises or lowers quality while the rest of the firms leave quality unaltered.

Let us consider first market demand as a function of quality height when vertical quality changes are made simultaneously by all firms. Unless demand is totally inelastic, a rise in vertical quality in a fixed-price market—like a fall in price in a fixed-quality market—will affect the amount demanded to some degree. Buyers will purchase more. Yet the statement just made is ambiguous; does it mean that they will buy more units of the product? or merely that they will purchase enough to bring them more satisfaction? This question does not arise in the theory of price, since when products remain unchanged in quality an increase in satisfaction can be obtained only by an increase in the number of units consumed. But when quality is vertically variable, this is no longer true.

Suppose a situation in which mining companies are supplying ore to a copper-refining firm, and now offer a higher-grade ore at the same price. Will the refining firm increase its purchases? If the demand for refined copper is not totally inelastic, the firm will certainly buy a large enough quantity to give it a greater volume of refined copper, but it is altogether possible that a smaller volume of the superior ore will yield the increased volume of copper desired, in which case the firm's purchases of ore will actually be reduced. A similar pattern of response is possible in cases where the desired ingredient is not a physical substance like copper, but a psychic quantity or a measurable service, such as mileage in an automobile tire. In all such cases it is necessary to distinguish between the *volume of satisfaction* desired by the buyer and the *number of units* desired.

To obtain the sharpest picture of buyers' response to a vertical

change in quality, let us consider the kind of vertical variation in which an upward change increases the amount of satisfaction obtainable from a product, in the opinion of all buyers, without there being any accompanying decrease in its satisfactoriness in some other respect. Ordinarily a cost-raising quality change involves both a quantitative element (the giving of "more" of something which is invariably preferred in larger rather than smaller amounts) and a qualitative element (the provision of some other quality or qualities which are preferred in some optimum amount, and can be deficient or excessive).[6] Thus it is ordinarily a mixture, an alloy. But the proportions of the amalgam are variable, and we can conceive of a limiting case in which only the quantitative element is present—when the change consists simply of an alteration of the size of the unit, all sizes being equally convenient or economical, or of the amount of some desired ingredient contained in it, buyers being wholly indifferent to any concomitant variation in the amounts of other ingredients present.

If we restrict our analysis to this "purest" kind of vertical variation, the pattern of response of consumers to vertical changes can be stated without difficulty. Clearly it must be exactly what their pattern of response would be to price changes in terms of a fixed unit. In any market demand schedule which embraces the gamut between the prohibitive price and the zero price, there is at least one point or range of output (and price or prices) at which the price elasticity of demand is unity; at smaller outputs (higher prices) the elasticity is greater than one, while at larger outputs (lower prices) it is less than one. Similarly, in a fixed-price market in which the unit is of variable size there must be some range of small sizes in which an increase in the unit's size causes a rise in physical volume demanded which is more than proportional to the increase—in other words, it causes a rise in the number of units demanded; beyond this there must be a size, or series or range of sizes, in which an increase raises the physical volume demanded proportionally, so that the number of units demanded remains unchanged; and beyond that must lie another range in which, though the physical volume rises further, the number of units demanded declines as the unit grows in size until finally, at the satiation point, the decline in units demanded is proportional to the increase in the unit's size.

We need not, however, include the entire gamut of demand in our analysis. Just as, in price analysis, profit-maximizing or money-revenue-

[6] Even changes in the size of the unit involve more than a simple quantitative change if the product is packaged. Imagine, for instance, tomato juice being made available to housewives in cans of various sizes ranging between one ounce and one ton, all selling at the same price (resale being prohibited). Surely the "best buy" would be some size smaller than the biggest.

maximizing firms would never be concerned with prices in that lower range in which the elasticity of demand is unity or less than unity, so, in vertical quality analysis, we can safely ignore the corresponding upper range of vertical quality, since cost-raising quality improvement would not be advantageous to firms in a fixed-price market unless it induced an increase in the number of units sold. In what follows, therefore, we need be concerned only with that range of outputs in which a rise in quality results in a rise in sales, and vice versa. We shall assume (4) that output demanded is an increasing function of the height of a product's quality, and that all buyers, no matter what their horizontal preferences are, behave similarly in response to a given degree of quality improvement.

If all firms should raise (or lower) quality in unison, there would be no reason to expect any firm to gain (or lose) more or less than its proportionate share of the total increase (or decrease) in market demand. On the other hand, if one firm should make its product vertically superior to rival products, it could be expected to attract buyers previously attached to those rival products—and vice versa. We may reasonably assume, therefore, that (5) when vertical quality changes are made "across the board" each firm continues to maintain its former share of the market; when one firm alters quality while others do not, its share of the market changes in the same direction.

This raises the question as to whether vertical quality differences would be allowed to persist in a one-price market. Though this is obviously a question of considerable theoretical interest, the temptation to explore it will be resisted. It will simply be assumed that (6) every change in vertical quality made by a firm will be matched, either immediately or eventually, by all other firms. (This could be true either because whenever one firm is prompted to alter quality vertically, others are similarly prompted for the same reason, or alternatively, because other firms feel forced to follow suit in order to retain their shares of the market.)

This assumption further narrows our field of inquiry. It may be defended on the ground that it is in keeping with the conclusion generally reached in monopolistic competition theory that when sellers of differentiated products have identical costs, every variety must sell at the same price in equilibrium.

A few other assumptions are needed to keep the analysis manageable: (7) Each firm offers only one variety of the product. (8) Decisions of rival firms in matters of quality are made independently. There is no collusion. (9) Buyers act rationally and respond promptly and correctly to every change in the quality alternatives made available to them. (This condition bars producers from being able to exploit consumer

ignorance, apathy, and gullibility.) (10) All horizontal qualities cost the same to produce. (11) At any given output rate, cost varies with quality height; and at any given quality height, cost varies with output, in such a way that all average cost curves are U-shaped. (12) Cost functions do not change; technology is constant.

III. *Short-Run Equilibrium*

We are now ready to build a theoretical model of a market conforming to our definition of pure quality competition, and to study the equilibrating vertical quality adjustments made and the position of vertical equilibrium reached under certain assumed conditions.

The assumptions stated above will be used without modification throughout the analysis. Three additional assumptions are made at the start, then later modified: (13a) Firms seek to maximize profits. (14a) Every change in vertical quality is immediately matched by all other firms, and each firm acts on the expectation that this will be so. (In other words, we are assuming here that the already-assumed "eventual" elimination of vertical differences occurs so quickly, and that this fact is so well recognized, that no firm considers it worth while to seek the temporary benefits of a newly created differential.) (15a) The number of firms is fixed at ten.[7]

Let costs—which are similar for every firm—be as shown in Figure 1. Each of the curves labeled AC depicts the average cost of producing a certain level of quality, designated by the subscript. Since vertical quality is continuously variable, the family of cost curves drawn represents only a few of the possible heights of quality.

Let OP represent the fixed price, and AC_0 the cost curve applicable to the vertical quality currently being offered. Let the market demand for this quality at this price be such that every firm's demanded output (one-tenth of the market demand) is OM. We thus start our analysis with each firm earning only normal profits—the position that would be attained if vertical quality were held fixed and the number of firms allowed to vary until excess profits or losses were eliminated. Let firms now be free to vary quality vertically. Our problem is: what variation will occur?

In order to investigate this question, we need further information about demand: namely, the change in quantity demanded associated with each change in the level of quality. This information can be assembled in the form of a schedule, and plotted as a curve; but it will

[7] Use of numbers rather than algebraic symbols to designate the number of sellers is solely for convenience in exposition, and is not to be regarded as diminishing the model's generality. If the reader prefers, n can be substituted for 10, $n+1$ for 11, etc.

not be the familiar kind of demand curve showing quantity demanded as a function of price. Instead, it will show quantity demanded as a function of quality height, or, more precisely, of the cost uniquely associated with that height of quality at that rate of output.

Let us imagine the vertical quality to be varied while price is left unchanged, and note with respect to each quality height the output demanded, and also the unit cost of supplying that output. For each quality selected a point on our diagram can be found, the x distance of which represents the quantity demanded (the number of firms being what it is) and the y distance the unit cost of supplying that quantity. The locus of points so obtained is the desired curve.

This curve is sufficiently unconventional to warrant some further comments as to its character. It is, in a sense, a demand curve; for it

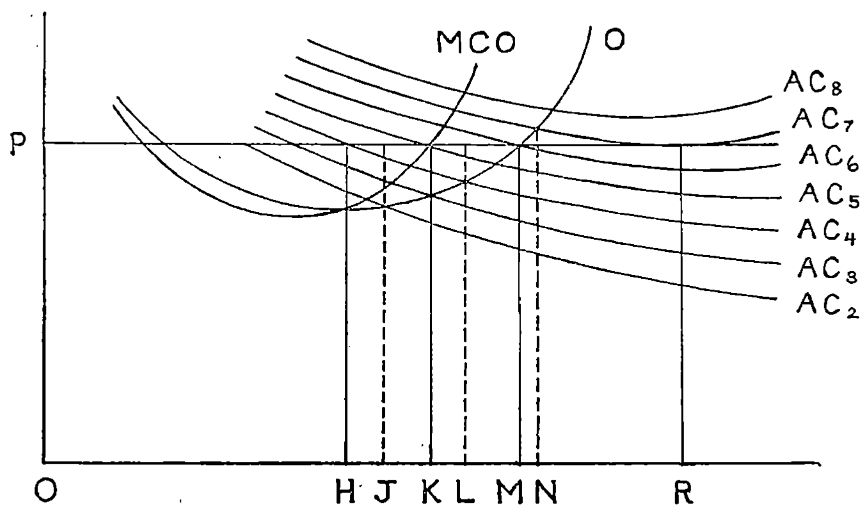

FIGURE 1

shows, for each height of quality selected (represented by the cost of supplying that quality), the quantity demanded. But it differs from the ordinary demand curve in that it does not give the demand *price* but rather the demand *cost* at each rate of output—that is the cost which the firm must incur in order to induce the purchase of that output, price being held at a predetermined level.

Its usefulness lies in the fact that it reveals the various options actually open to producers in a fixed-price market. In a "purely competitive" market the conventional average cost curve indicates genuine options. There each producer is at liberty to market as large or as small an output as he pleases; the cost curve and price line are useful in that together they reveal the consequences of each possible decision, and so

show which options are less desirable than others. But in a fixed-price market in which products differ horizontally in quality the conventional average cost curve does not contain options actually open to producers. All but one of the cost-output combinations on the curve are unattainable as long as the buyers' demand functions, the price, and the number of firms remain as they are. The producer is not free to unload on the market any output he chooses of a given level of quality; only if he varies vertical quality to the extent necessary to induce buyers to purchase the output he has in mind does that output become a genuine option. And then it is the cost of producing *that quality* which is the relevant cost in weighing the desirability of adjusting output to that rate. Hence the curve just described, relating demanded output to the cost of supplying that output, serves precisely the same purpose in a fixed-price market which the conventional cost curve serves in a fixed-quality market.

Since it reveals the cost of each of the actual options open to producers, this curve will be termed the *cost of options* curve, or, more briefly, the *options* curve.

Referring back to Figure 1, suppose that if quality AC_2 is selected, each firm's share of the resulting market will be OJ; if AC_3 is selected, demanded output will be OK; if AC_4 is selected, OL; and if AC_7 is selected, ON. The curve O, drawn in conformity with these suppositions, shows the possible choices open to the firm.

What shape should an options curve have? If average cost curves were horizontal lines, the options curve would climb continuously upward, showing an increase in unit cost associated with each rise in quality. But since average cost curves are assumed to be U-shaped, a complication arises: vertical variation influences cost in two different ways. On the one hand it alters the cost associated with any given output—that is, it shifts the average cost curve bodily. Its effect along this channel is always the same: a rise in quality means a rise in the cost function, and vice versa. But vertical quality change also alters the actual rate of output (except when the elasticity of demand is unity), so that the unit cost becomes different from what it would have been if output had not been affected. In other words, it causes a movement along the curve. And its effect along this channel is not always the same. Up to a point a rise in quality brings an increase in sales that makes possible economies resulting in a lower unit cost compared with the cost of the same quality produced at the lesser rate; but this effect gradually diminishes in force as output is increased until there finally comes a point where diseconomies arise that raise the unit cost of producing a given quality. Thus for a while the two influences pull against each other; and it is likely that at very low rates of output the

added cost of producing a higher quality will be more than offset by the reduced cost of producing on a larger scale. At such rates unit cost falls as quality is raised, and the options curve has a negative slope. But eventually the two influences reinforce each other, and unit cost must certainly change in the same direction as quality; the options curve then becomes positively sloped, and continues so until that height of quality is reached at which quality raising no longer raises output, when the curve becomes vertical. At still higher quality levels it bends backward.

If a family of U-shaped cost curves were drawn one directly above the other, it would be geometrically possible to draw an options curve which bent more and more in a counterclockwise direction until it showed unit cost falling once more as quality rose to very high levels. But this would be an improbable situation. It should be expected that when quality rises the average cost curve not only rises but shrinks toward the left. In the limiting case in which changes in vertical quality are merely changes in an accounting unit, the minimum-cost output rate must vary inversely with the size of the unit. In that case the locus of minimum points of the family of average cost curves would be a rectangular hyperbola, and no decline in output short of an actual decline in physical volume would keep the options curve from rising.

Since quality reduction is not advantageous unless it reduces unit cost, and quality raising is not advantageous unless it increases demand, we can confine our analysis to that range of vertical variation in which both unit cost and output vary positively with quality, thus ignoring the negatively sloped portions of the options curve.

It must be borne in mind that the position and shape of the options curve vary with the number of firms in the industry. This is because the firm's demanded output at each quality level varies with the number of firms, whereas its average cost curve relevant to each quality remains fixed. Therefore the firm's options curve shrinks upward and toward the left as new firms enter the industry. This complication will be dealt with shortly, when the number of firms is permitted to vary.

Now let us apply the options curve concept to the problem in hand. Under the assumed demand conditions it would not pay the firm to raise quality. At any output larger than OM, cost is higher than price. Quality reduction would be profitable, however. Any one of the four levels AC_2, AC_3, AC_4, and AC_5 would be an improvement. What level will be most profitable? The answer is found by drawing a *marginal cost of options* curve, showing for each rate of output the increment in total cost necessitated by a rise in quality sufficient to expand salable output by one unit. The point at which the marginal-cost-of-options curve intersects the price line denotes the output (and the quality

associated with it) that maximizes profit. This is shown in Figure 1, the marginal curve being labeled MCO. It can be seen that every firm will select OK of quality AC_8. With a change to this new level super-normal profits are earned.

IV. *Long-Run Equilibrium*

We now relax assumption 15a, substituting 15b: The number of firms is allowed to vary. Profits invite entry. When an eleventh firm enters, each firm's demand shrinks to one-eleventh of the market demand.[8] Its output, let us say, is now in the neighborhood of OJ; the firm is in disequilibrium once more. The options curve drawn in Figure 1 no longer holds. In order to determine the equilibrating adjustment needed, a new curve must be plotted, appropriate to an eleven-firm industry. In fact, we need at this point to visualize a whole family of options curves, one for each of the possible number of firms.

How should such a family be drawn? If we think of the options curve as composed of points, each of which lies on some AC curve associated with some level of quality, a new firm's entry causes these points to slide clockwise along their respective AC curves sufficiently so that each point is the same fraction of its former distance from the vertical axis. For each number of sellers these points lie differently and a separate options curve can be drawn.

None of the curves will intersect another; for when the number of firms increases, each point of the newly formed curve must lie somewhere to the left of the corresponding point (*i.e.*, the point representing the same height of quality) on the old one. And since the AC curves are concave from above, and descend more steeply than the options curve, and rise less steeply, each point on the options curve near its right extremity will move downward and to the left when a new firm enters, but the slope of its path will be less steep than the slope of the options curve at that point, while each point near the left extremity will move *upward* and to the left, and the slope of its path will be steeper than the slope of the options curve at that point. Therefore any new options curve formed by the entry of an additional firm must lie wholly within the area bounded by the former options curve.

The curves will also converge as we follow them upward to the left,

[8] It does not necessarily shrink to ten-elevenths of its former demand. A somewhat smaller shrinkage is to be expected, since there is an offsetting factor. Entry of a new firm causes products to be "spaced closer together" horizontally, which may be presumed to reduce their horizontal unsatisfactoriness on the average, and thus to increase the market demand. But so long as market demand grows less than sufficiently to offset completely the shrinkage in the firm's percentage of the market, the firm's demand will become smaller. This must now be assumed to be the case.

since they cannot cross the y axis but must continually approach it. And they will also converge as we follow them upward to the right, since each curve in the family must approach the limiting output at which the product must be given away free (or its size made infinitely great if the price remains fixed) and this limit must also be the y axis, *i.e.*, an infinitely small number of units.

The family of options curves appropriate to our model is shown in Figure 2. In this diagram O_{10} corresponds to the O of Figure 1, and MCO_{10} to MCO, the subscript 10 indicating a ten-firm industry.

The new output rate is shown in Figure 2 by the intersection of AC_4 and the new options curve O_{11}. It will be profitable for each firm to move to the right along O_{11} (*i.e.*, raise quality) until it reaches an

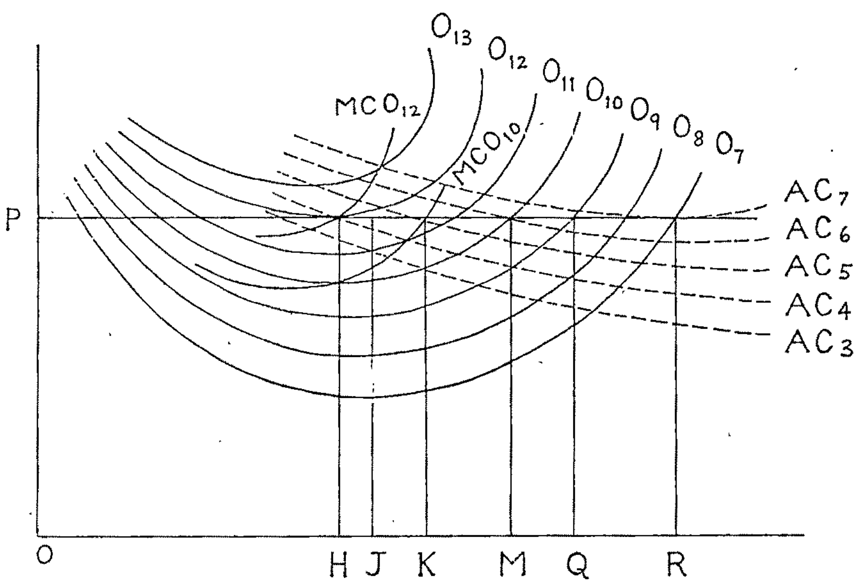

FIGURE 2

output at which its new marginal-cost-of-options curve (not shown) intersects the price line. As O_{11} has been drawn, excess profits will continue to be earned. These will attract further entry, which will cause a further shrinkage in output per firm, which will induce firms to adjust quality upward still more; and this process must continue until excess profits are eliminated. Curve O_{12} is drawn to illustrate the final equilibrium position. With twelve firms in the industry OH is the equilibrium rate of output, and AC_4 the equilibrium height of quality. Thus we see that long-run equilibrium is reached when the options curve shifts

upward and to the left (as new firms enter) until it becomes tangent to the price line.

This is the maximum number of firms (and varieties) possible in the industry. If a thirteenth firm entered, there would be no possible way by which firms could avoid losses.

V. *Alternative Equilibrium Situations*

Different equilibrium positions are reached if assumptions (13a) and (14a) are altered. Suppose, instead of (14a), we assume (14b): Each firm expects the vertical quality of all rival varieties to remain unaltered although actually, since all firms are faced with similar conditions and behave similarly, all firms make identical decisions as to vertical quality. Now the firm's actions are based on the belief that any given cheapening of quality results in a greater loss of sales than before, and any given quality betterment in a greater gain in sales. The options curve concept can be retained, but new curves would have to be drawn, indicating, for each industry-wide level of quality and for each number of sellers, the sales volume which the firm would secure by each vertical change if other firms kept quality unaltered.

This is a more complex situation. For each number of sellers in the industry, a family of options curves is needed, each of which intersects the "industry-wide options curve" (the curve shown in Figure 1) at the point at which the quality of the firm's product is the same as that of the rest of the industry. Let us imagine, in the situation depicted in Figure 1, that one firm varies quality while all other firms adhere to quality AC_6. How should the options curve appropriate to this supposition be drawn? It would intersect the price line where the AC_6 curve intersects it, but it would be a flatter curve—it would intersect the AC_5 curve, for example, further to the left, and the AC_7 curve further to the right—and would be tilted more to the right, so that its minimum point would lie further to the right.

Provided that the newly drawn curve were not so tilted as to be tangent to the price line, it would show the profitability of the firm's reducing quality to some lesser extent—to AC_5, say. Since all other firms likewise reduce quality to AC_5, the firm finds that its output has not shrunk as much as had been anticipated; their action has shifted the firm's options curve downward and toward the right so that it intersects the AC_5 curve at the point where the industry-wide options curve in Figure 1 intersects it. Further quality reduction is now worth while. By a succession of such adjustments the industry reaches its short-run equilibrium, with some excess profits being earned, and entry of new firms invited.

The process of reaching long-run equilibrium involves similar adjustments. These need not be described here in detail. It is sufficient to point out that because of the tiltedness of the options curves (as compared to the industry-wide curves shown in Figure 2), tangency to the price line will be achieved before the number of firms is increased to twelve so that in the final equilibrium quality will be higher than AC_4 and the number of firms fewer than twelve.

Now let us replace the profit-maximizing assumption (13a) with (13b): Firms desire no more (and no less) than an average return on investment, but always prefer a larger to a smaller volume of sales. Their objective is thus output maximization, subject to the condition that average cost does not exceed price.[9] In this case, contraction of output through quality reduction for the sake of temporary profit will be avoided. Expansion of output through quality raising is also undesirable so long as the number of firms remains unchanged, since it entails losses. But if we suppose that each firm believes that a rise in quality will force some competitor out of the market, and is willing to pay a temporary price for eventual gains in sales, quality raising will occur.

If firms, producing OM of AC_6 in a ten-firm industry (see Figure 2) raise quality to the level at which their new cost curve intersects the price line at, say, an output of OQ, and if the market demand should be nine times this output when quality is at that height, sales would temporarily fall short of OQ and losses would be incurred until one firm left the industry; then the remaining nine would earn the "normal" rate of return once more, and on an increased volume of sales. This process would continue either until the minimum point on an average cost curve were reached, or, if that point could not be reached in an industry of more than one firm, until the number of firms were reduced to one. According to Figure 1, a seven-firm industry could produce quality AC_7 at the minimum average cost rate, OR. Here equilibrium is reached. This is the maximum height of quality that can be produced and sold at price OP without incurring losses.

If firms sought to maximize output, yet were unwilling to undergo temporary losses for the sake of growth, no firm would follow this aggressive policy, but would adjust quality to the height at which the unit cost of producing the quality demanded equaled the price. Thus OM would be one of several possible long-run equilibrium positions.

[9] This assumption emphasizes the empire-building aspirations rather than the monetary appetites of business leaders. The writer will not take the space to defend its realism here. For justification, see J. A. Schumpeter, *Theory of Economic Development* (Cambridge, Mass., 1934), p. 93; R. A. Gordon, *Business Leadership in the Large Corporation* (Washington, 1945), pp. 305-12; J. M. Clark, "Toward a Concept of Workable Competition," *Am. Econ. Rev.*, June 1940, XXX, 247.

Which position was actually reached would depend on the number of firms that happened to be in the industry.

By varying our assumptions we have found several alternative sets of conditions of long-run equilibrium: (1) that in which the number of varieties (among those numbers capable of being produced at a cost equal to price) is maximized, quality height being adjusted to the level necessary to achieve this maximization; (2) that in which quality height (among those heights capable of being produced at a cost equal to price) is maximized, the number of varieties being whatever number makes possible this maximization; and (3) various intermediate positions, in which vertical quality is higher than in the first case though less than in the second, while the number of varieties is greater than

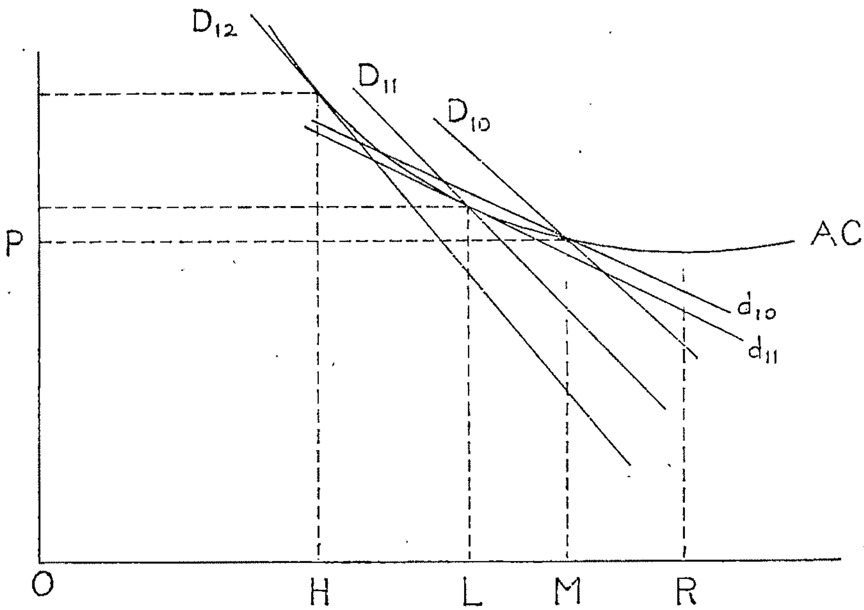

FIGURE 3

in the second case though less than in the first. We have located a *range* of equilibrium positions.

That there is a range rather than a single position is not due to the fact that competitive adjustments are forced to take the form of quality changes rather than price changes. The equivalent of each of these positions can be shown on a conventional diagram of a firm selling a differentiated product of fixed vertical quality in a monopolistically competitive market.

Equivalent to the case of concurrent quality changes is the case of

concurrent pricing, which, when employed by profit-maximizing firms, maximizes joint profits. Each firm adjusts its price on the basis of a demand curve which is $1/n$th the industry demand curve, n being the number of firms. In Figure 3 such a demand curve is shown as D_{10}. If firms have been producing for a market in which price has been fixed at OP and are now free to alter the price, they can gain supernormal profits by raising the price. But entry of new firms will shift the demand curve leftward. Equilibrium is attained at OH when the curve reaches the position D_{12} where it is tangent to the cost curve.

The equivalent of our second equilibrium position can also be shown. Its conditions correspond to the Chamberlinian assumptions. Each firm's demand curve (based on the expectation that prices of other varieties remain unchanged) is more elastic than the curve showing the volume of sales when all competitors' prices change too. Equilibrium is attained at OL when entry of new productive capacity pushes D_{10} leftward to the position D_{11}, where the firm's demand curve, which was d_{10} and is now d_{11}, becomes tangent to the cost curve.

The equivalent of our third equilibrium position, based on desire to maximize output, acceptance of average-cost pricing as a norm, and willingness to take temporary losses, is at OR.

These comparisons enable us to see how similar to price variability in its final effects is vertical quality variability.

VI. *Implications of the Analysis*

The writer is fully aware of the limited scope of the analysis just presented. The model studied illuminates only one small corner of the great arena of quality competition.

By restricting ourselves to a study of *equilibrium,* we have obtained a picture of competitive behavior with regard to quality variability which is highly artificial and seriously incomplete. This is unavoidable. A prerequisite of equilibrium is the attainment of perfect knowledge (or, alternatively, an unalterable state of knowledge). Equilibrium analysis therefore turns its back on the semi-ignorance, uncertainty, and exploratory character of real-life economic activity. The typical patterns of quality competition are in large part founded on disagreement as to the best means of satisfying wants, and reflect the continual experimentation that is so strikingly characteristic of economic behavior. Innovation is intelligible only when viewed in such a setting; it is inherently experimental, risky, a challenge to the current state of knowledge and currently prevailing attitudes. Equilibrium analysis, on the other hand, necessarily assumes that the newest ideas have become common property, and have been tested out long enough so that their

value is no longer in doubt. It therefore omits this important aspect of economic behavior, revealing only those aspects of quality competition that are connected with cost differences and the diversity of wants.

By further restricting the analysis to a study of *vertical* variability of quality, we have neglected the important area of horizontal variability, in which decisions regarding quality affect the range of choice open to buyers, and the degree to which products conform to buyers' needs and tastes and are suitable to the uses to which they are put.

Our analysis would also have been more comprehensive if it had not abstracted from certain frequently found conditions in the real world—for example, semi-ignorance, gullibility, and the bewildering complexity of choice when quality variability is multidimensional and information about quality and product performance is not readily available.

Nevertheless, the analysis has been of some use. It has made clear one thing which may be familiar enough to observant students of economic life but which customary methods of economic analysis do not show: namely, that vertical quality competition performs essentially the same functions that price competition performs. Whenever price is excessive relative to product—or, to put it the other way round, whenever product is deficient relative to price—it causes producers to revise their offers, making them more attractive. Thus, like price competition, it induces behavior which results in the elimination of excessive profits. Similarly, the firm's equilibrium position in a fixed-price market with vertical quality freely variable appears to be identical with the position reached in a fixed-quality market with price freely variable. When products are horizontally differentiated, and when firms seek to maximize profits, the firm's output falls short of that at which unit cost is minimized. It could also be shown that, when horizontal differentiation is lacking, output settles at the minimum-cost rate. Thus vertical quality competition, like an able understudy, steps into the breach when price competition ceases to function and brings about results usually associated only with price flexibility.

The analysis thus makes it clear that a uniform, unchanging price is not necessarily evidence of lack of competition. Absence of price variation may indicate merely that competition is restricted to the quality dimension. Only when quality is also uniform and rigid is competition lacking. Unless economic investigators are aware of the inverted "price" competition that can occur when vertical quality is variable, they may be led into serious error in their appraisal of the competitiveness of certain industries.

In industries characterized by quality flexibility, the term *price*

rigidity is inappropriate, since it has no economic significance. The term is surely misused when applied to situations in which the price of B on Tuesday is the same as the price of A on Monday; it can be meaningful only when both prices refer to the same product, and to a specified unit of specified quality. When the unit is fluctuating in size or quality, we are moored to a shifting anchor; price would have to fluctuate similarly in order to produce a situation comparable to that of a rigid-price, rigid-quality market.

All this suggests the need for a broader approach to the oligopoly question. Unless quality is uniform and invariant (and actual prices coincide with published prices) the price theorist's analysis of oligopoly is based on incomplete data. The extent to which the results associated with competition are realized in an oligopoly situation cannot be correctly assessed without taking into consideration conditions with respect to quality differentiation and variation. Model-building of the sort attempted in this paper may help to turn the attention of economists to factors in market situations whose importance has hitherto been underestimated.

"REALISM" IN POLICY ESPOUSAL

By Clarence Philbrook*

Economists in general have learned to live under the recurring charge that they are "unrealistic." The term may, of course, mean many things. Where the meaning applies to what they do strictly as "scientists," the barbs need not go deep. Against such slings and arrows there hangs ready a familiar armor—namely, the prestige of scientific method, made magically tough by having clothed also those heroes of the battle for knowledge, the natural scientists. Not always are economists content, however, to remain "scientists" describing relationships and eschewing reference to the desirability of things, or even to remain "engineers" suggesting devices to achieve ends laid before them entirely by others. They do step out of these rôles and give their society, or some sector of it, advice which commits the adviser to responsibility for value judgments.[1] They do "take positions"—act as advisers in a full sense. In this rôle too they are often faced with the charge of being "unrealistic."

Used in this connection the epithet becomes a different missile and will not be turned aside by the same armor. What range of meanings may possibly attach to the term need not for present purposes be explored. One particular connotation which it frequently carries will be singled out and attributed to the word. This meaning is, that the economist charged with "unrealism" has made recommendations requiring for their fulfillment changes in things which must, for the purpose at hand, be treated as unchangeable. It would be brash to deny that such a charge may often be true. A basic responsibility implied in it has, at any rate, a valid claim to attention: *of course* the economist, to give useful advice to society, must regard various things as in a significant sense beyond our power to alter. Failure to do this seems virtually a definition of idle dreaming. Wherever he has failed to be guided

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[1] Throughout this paper the word "advice" and terms used synonomously are to be interpreted in the broadest possible sense—to include any recommendation, inside or outside the classroom, made without hypothetical purpose clauses more restrictive than the necessarily implied aim to achieve the desirable.

properly by this precept, the economist must indeed confess that he has sinned.

Yet there is a more cankerous sin which economists have all too often committed in order to escape indictment. So great has become the scramble to turn state's evidence, that one who suggests a solution not treating as "given" ("here to stay") any particular popular social practice is merely fortunate if no colleague misquotes him Carlyle's response to Margaret Fuller's decision to accept the reality of the universe: "Egad, you'd better!" The charge of "unrealism" is used with telling effect to discredit policy recommendations without adequate consideration. It probably affects in no small degree the determination of what types of work are respected and supported in universities. Science has rightly been said to aim at stability of belief by cultivating doubt; but the spirit behind the familiar charge, by restricting the range of questioning deemed worth while, limits the use of science for this fundamental purpose. In so doing that spirit, on the negative side, creates a presumption that the time of scholars is readily available for other activity, and, on the positive side, implies that worthy uses for time must be sought elsewhere. It therefore fosters a test of scholars which, at a moderate stage of development, asks whether their activity is "constructive" (Does it build, not tear down? Does it look forward, not backward?) and, at a now common extreme, asks whether their activity immediately and discernibly influences practical affairs. Of course the man least demonstrably ineffectual is he who advises others to do what he knows they will do without his advice. Indeed, the competition for reputation as "realists" works toward a condition in which students of society are loath to take a minority position. Society tends as a result to lose the benefit of that disinterested, fundamental, continuous criticism which, unless provided by persons made independent of practical affairs for that very purpose, is unlikely to be forthcoming. There has grown a widespread practice of cooperation with "things as they are," without explicit criticism of them, which is bound to have the effect of active approval regardless of whether such is intended. Thus, the spirit of "Egad, you'd better!" bids fair to render the field of political economy not merely useless but actually damaging to the social welfare.

However, I wish to invite contemplation and discussion; for the practical consequences hinging upon the treatment of this issue are enormous, and yet the matter seldom crosses the threshold into systematic consensus-seeking, but rather remains a little-explored source of recurring irritation and *ad hoc* dicta. I should like, therefore, to avoid resting upon the controversial conclusion stated above, and find a more neutral point of departure.

Perhaps this can be found along the following lines. In deciding what advice to give, one clearly must regard some conditions as given. On the other hand, the very fact that some one is to be advised to do something which presumably he might not otherwise do means that not everything in the situation is being treated as given. Evidently what is at issue is "correctness" in the selection of things to be so treated. If we can find literally no criteria, consensus on policy is indeed hard to come by. It must then be impossible to force the "unrealist" to regard the necessary things as fixed; and, on the other hand, his critic can always, by "realistically" accepting the universe of his choice, find sanctuary against the necessity of defending his own positive policies. Is it possible to say anything helpful toward consensus about what actually constitutes "realism," in some defensible sense, in the selection of proposals on policy? It may turn out so, if we explore a path through a series of intellectual positions, asking how far it may reasonably be supposed that plaintiff and defendant can walk together and where they might feel forced to part company. The method will be to start with a position which a "realist" surely will not think labels alterable any conditions which are not so, and progressively introduce elements which he might consider less "realistic," at each stage inquiring whether he really would be likely to reject the new element. Finally the question will be raised whether the "realist" can reasonably insist upon any principle which would enable him to use meaningfully the familiar charge. An effort will be made to maximize the ease with which any telling rebuttal that may be available against the argument of this paper can be made, so that if the conclusions reached here are wrong the fact may be made clear and many of us may mend our ways in keeping with a sound "realism."

The position most safely "realistic" would seem to be that which took *everything* in the situation as given, including both the physical universe and the attitudes of all persons. One who adopted it would presumably interest himself exclusively in the discovery of regularities and the forecasting of events. The fact that this view by no means corresponds to the scientific outlook in total does not assure that the two are never thought to be identical. Such identification probably accounts in no small measure for the high prestige of simply any "empirical" research as opposed to "arm-chair theorizing": almost any conceivable collection of figures will be regarded in important quarters as representing a certain hard-headed practicality, while any serious discussion of what is the real significance of the collection is considered either jealous carping or mere mental gymnastics by minds too lazy to do "constructive" work. Finding "what the facts are" is the great task

according to this view; for, if they were once discovered, we should then be in position to make forecasts.

This position has great appeal to men of scientific bent, and indeed to all of us. It is "obvious" to common sense that every effect must have a cause and that any state of mind must be an effect of preceding states of mind, body, and environment. To be sure, some embarrassment may arise in trying to find a function and purpose for the scientist himself; for, although the surrounding stimuli may cause him to emit sounds and cause us to call the sounds a forecast, he cannot in this view "influence" anything, and the notion of function, including that of purpose, is itself meaningless. Nevertheless, the mere fact that an analyst will typically use words which imply that his conclusions are yet to be determined by the effort of investigation or discussion does not prove the deterministic position false. Activity that is apparently purposeful may be viewed either as the result of a free will operating with its available means toward some goal, or alternatively, as the movement of a set of pre-established forces working toward equilibrium. In the determinist view the pseudofunction of the scientist is that of a cog in a machine. The tempting query why, if determinism is true, the scientist would struggle as he does, or society pay him to do so, is itself meaningless, for "would" no longer can connote volition and "struggle" has no meaning; he and society do not do, in any significant sense, what they think best—they simply do.

The well-known and fatal difficulty with the deterministic attitude that we must treat everything as given is that the truth of its opposite also is obvious and is inevitably dominant in our procedure. It is certainly impossible for the mind to act regularly as if it regarded itself as an epiphenomenon accompanying the burning out of a physicochemical reaction. Although nuclear physicists could not alter the fact of the fissionability of the atom, it is said that some of them believe they could (as well as should) have refused to discover the fact or, at least, to put it to its most famous use. No analyst will, where it counts, cling to a purely deterministic position. All will "play like" their "decisions" are decisions in the common-sense meaning of the word and capable of affecting reality.

Social analysts as advisers will, then, take at least one step away from regarding everything as given and still feel themselves to be "realists." The most modest step is exemplified where the analyst occupies an administrative post with some discretionary power. A man in that position would believe that the word "discretion" had some meaning—that the external situation could be influenced by a *decision,* such as, for example, to allow a certain wage rate to be raised. The step is modest in

that it leaves the scientist in the same instrumentalistic relation to the situation as he might bear to a group of chemical materials to be manipulated. Further, nearly all social analysts would take another step without at all losing a sense of "realism," in believing that they might actually influence the world by giving advice to crucially placed administrators or legislators—on occasion simply by making evident to them the truth of a cause-and-effect sequence or the validity of a value. Indeed, adding together these two steps, we have the basis for what appears to be regarded as the most valuable activity of analysts as social advisers, although a relatively high respectability seems to attach also to the act of advising organized pressure groups.

The range of possible change, and of influence of the social adviser, is relatively narrow if channels of influence are restricted to those just mentioned. For most important changes (usually legal) require a change of attitudes on the part of a large number of persons. This need not appear true, to be sure, to one willing to take a purely instrumentalistic view. In that outlook, the range of action would be considerably broader, since it would be possible to advise holders of power to use their power "for the good of the people" with small regard for what the people thought they wanted. Indeed, much recent history of government might be accounted for in terms of a general belief that "realism" is violated by those who hope social advisers may have influence otherwise than directly. This instrumentalistic position need not disavow the possibility of change in mass attitudes: a benevolent government may "educate" the people to agreement with its measures. This is a clear-cut, possible intellectual outlook; but if such neo-Machiavellianism is to be espoused, the social scientists adopting it should make as clear as they can that they have given up hope of that consensus-created, not merely consensus-creating, government which is usually called democracy. Those who believe that consensus should precede political action must, it is merely tautological to say, believe the archetype of their "action" as advisers to consist of effort to help others discover correct attitudes; so we may suppose that, in considering attitudes to be among the alterable conditions, we still have the company of "realists" whose ultimate values include a rôle for democracy.

Since important changes in society do require alterations in the attitudes of many persons, social analysts, in order to form opinions on what changes would be worth while if they could be brought about, must often consider at great length what processes would go forward under assumed conditions which are often at variance with the facts. Strangely, by carrying on such considerations carefully rather than carelessly, men call down upon their heads some of the most scornful

charges: "unrealistic," "too theoretical," "purist," and the like. Yet it is difficult to see what could be more "unrealistic" than saying that a change would be worth while (unless mere change for its own sake is the sole issue) without first methodically considering what results might reasonably be expected. So surely it may be assumed that the school of "realism" would accept the study of "models," or "theories," as indispensable.

It is in deciding what alterations of attitude to attempt, that the point arises which presumably most persons stressing "realism" have in mind. Should we not, they might ask, distinguish among conceivable changes according to whether we stand some reasonable chance of actually effecting the necessary shift of attitude? Why waste effort by making suggestions which we cannot hope will be accepted? These queries appear to have much justice. The idea obviously is that one ought to list the actions open to him and attach to each a weight determined by the probability that it would in fact bring about the attitude change intended.

If we described a "pure realist" position as calling for decision by simply selecting the advice with the highest "probability" weight, we ought to be able to treat it as only a straw man. To be sure, the mere fact that most "realists" would reject an approach so stated does not mean it really differs from what they have effectively in mind; a major part of the thesis of this paper is that numerous economists are in effect espousing positions which, if stated clearly, would be repudiated by them. Nevertheless, one fatal criticism of any such bald "probability" approach must surely be treated as noncontroversial. No one would explicitly maintain that a high relative probability of having *some* effect should give priority to an act completely without regard to the relative desirability of the outcome it would tend to have. It seems reasonable to suppose, therefore, that the "realist" would accept as a part of "realism" the necessity of consulting end values as determinants of advice.

It becomes important, then, to recall what is required in due allowance for this element of "realism"; for, although few would deny its claims in the abstract, many become quite impatient when called upon in specific cases to give full weight to it. (Who having experienced the earlier years of the New Deal can forget how frequently the conclusive defense of almost any policy was that the government was *doing something*!)

Evidently the adviser, having arrayed the lines of advice he might give on a particular issue, must assign a weight to each according to the desirability of the change it would tend to promote. A change can be desirable otherwise than for the sake of novelty only as it furthers some

end. But since there are conflicts of ends, an action may further one end and lessen the realization of another, and the net significance cannot be known without first evaluating the various ends (or degrees of realization of them). Relative evaluation requires a common measure, hence can be accomplished only if the "ends" are but intermediate, serving in turn as means to, and deriving their value from, a more general end (which itself is merely one of a number of ends all serving as means to a yet more nearly ultimate goal.) Assigning the correct desirability weight to a change means judging its net influence upon the realization of some end sufficiently general ("high") to include all the intermediate ends touched by the change; and this judgment involves tracing the effects of the change upon each intermediate end and evaluating those effects in each case by reference to the inclusive end. Thus, literally full justification of the whole set of value weights one attaches to a set of policy suggestions would require laying bare the relations between the proposed changes and some all-subsuming, ultimate end of social organization. Only in this way could the mutual consistency of all the various means and subsidiary ends which constitute a total program for society be established.

In discussion aimed at consensus, the problem is one of showing a disputed policy to be a means to some intermediate end and then inquiring, of parties to the discussion, whether this "end" is in their view necessary as a means to what they regard as some more fundamental goal. If not, agreement is not logically called for. The proponent must then try to show that the disputed "end" is a means to something he himself regards as a more fundamental end, and if successful repeat the query. It is for present purposes unnecessary to dwell upon the complexities hidden under the light reference to showing a disputed end to be a means; what is needed is merely a suggestion of the extensiveness of the obligation taken on by acceptance of the necessity of value weights and consensus. If consensus is to be soundly reached, a process of the sort indicated must go forward until the derivation of importance is traced back to some end the authenticity of which is accepted by the parties to the discussion. Fortunately, it is usually not necessary to go far toward ultimates; but the ideal student of policy, far from refusing to talk about the sheer desirability of a proposal opposed to his own, would stand ready and eager to reduce the two, no matter how different, to commensurability in the manner suggested.

There is good reason to be appalled by the difficulty of the task cited, especially in a world become self-conscious and discordant about its values. It is of no avail, however, to assail as "purists," "absolutists," or "unrealists" those who call attention to the task. The only alternative

to readiness to defend a position in the sense indicated is to grant that at least some of one's means and intermediate ends have not been tested for mutual consistency, and that one's policy proposals have therefore no more authority than some diametrically opposite set. These considerations surely place a demand upon an economist giving advice on social policy that he shall have thought his way through, so far as the state of knowledge makes possible, to an internally consistent model of economic organization on which he bases his advice. The gravity of the potential effect of error in policy, and the immensity of the scope for growth and ripening of intellect toward power to grapple with the problems involved in discerning good policy, render merely ludicrous the widespread impatience toward "arm-chair theorizing," which, unless the integrity of the men involved is in question, must be regarded as an arduous process of critical contemplation and integration aimed at the development of wisdom.

Of course nothing in the foregoing discussion denies the notion that the end must be dealt with in the light of the availability of means. Neither is it affirmed that "the end justifies the means" in the sense that there is any end for the furtherance of which no device is too bad; but the ultimate end itself must contain criteria of acceptability of means, so that the means, if justified, are indeed justified by the end. Even though strong doses of starvation might have shortened immensely the employment depression of the 'thirties, the ends of the society justified the relief of distress. These things are probably all that need saying about the perennial argument over the short-run versus the long-run view in the selection of policy; yet one's faith that the full import of attributing value weights is noncontroversial is bound to be shaken by memory of how often any manifestation of the long-run view is answered with some form of the completely irrelevant "realistic" proposition, "In the long run we are all dead." Although this reaction has done much damage to the search for sound policy, by limiting the consideration of ends, it may nevertheless reasonably be interpreted as something other than repudiation (in the abstract) of thinking in terms of ends and means. Indeed, it is probably as a rule a confused, distorted, and misapplied criticism, not of means-ends thinking, but of presumed failure to apply fully such a calculus. More often than not, the thought reflected is simply a generalization of the example given above: the idea that the time dimension must be allowed for—that radical change takes time and meanwhile we must make the best of the situation, perhaps by means which hamper realization of some accepted goal. To be sure, a proposal involving thought of the long run might often be criticized because it seemed to violate the true

"probability" approach, which we shall in a moment try to state. But, it may be taken for granted, relatively few "realists" would question that in such an approach value considerations must have a place.

It seems possible now to sum up the most likely meaning of a "probability" approach—a position which must be the one that would be held by any who, in the light of considerable discussion, still were willing to make use of the charge, "unrealistic." Although in some cases only under pressure, they surely would accept these propositions: that many elements in a social situation are capable of change, including the attitudes which determine policy; that actions of individuals in their rôle of "social advisers" could have some influence on those attitudes; and that the advice to be given by them cannot be chosen without the aid of weights attached to different lines of advice according to the relative desirability of the change which these respectively would tend to further. They would insist, however, that a choice can be made only after superimposing another weight on each line of advice according to the probability of its taking effect if offered. Men called "unrealistic" are those who disregard this principle and presumably those who assign probability weights incorrectly.

There is a considerable appearance of reason about this method of thought. Still, it requires the most careful inspection.

It is important not to slight the fact that two lines of advice such as typically give rise to controversy over "realism" are not necessarily so related as to make "probability" considerations relevant at all. A believer in states' rights, for example, presumably may make clear his belief while yet offering good counsel on how best to operate a program which disregards such a conception. The relation required if "probability" is to have any place is that the two lines of advice be truly alternative—that is, mutually exclusive.

Two possible causes of mutual exclusiveness are suggested. First, sheer limitation on time, energy, and intellect requires specialization; and some decision must be made as to the field in which to develop special competence. May one not make an ample contribution by advising the Federal Reserve authorities how best to use their powers, without questioning whether the present banking system is the best conceivable? Actually, specialization raises no problem. The question is whether, not having studied the possibilities of alternative systems, the specialist causes or allows it to be supposed that his activities constitute support of this system against alternatives, or whether, having decided another system would be better, he conceals the fact. If one applies "probability" thinking and recommends that approach for others, it must be from sources other than specialization that he derives the implied mutual exclusiveness of different pieces of advice.

The second cause of mutual exclusiveness which the "realist" presumably has in mind is that the very act of approving a different general course may destroy power to guide action along the best path in an established, although less desirable, direction. There is no denying that suggestions from one listed among the faithful with respect to a program are, as "self-criticism," more likely to wield influence than is advice from "outsiders." Thus we can identify conceptually a type of case in which the lines of advice are alternative in a sense sufficient to justify at least entertaining the question of whether it is desirable to be guided by "probability."

It goes without saying, that the mere identification of such a class of cases gives no license to beg the question of whether any particular case belongs to the class. If indeed "probabilities" are sometimes a proper guide, the epithet "unrealistic" can at best be justified only upon an explicit showing that giving one of the lines of advice does preclude the usefulness of giving the other. But even for use in cases where "probability" is formally relevant the "probability" approach is open to grave doubt on a number of scores.

In the first place, what is the criterion for the relative weighting of a "degree of probability" and a "degree of desirability"? There is always the devastating possibility that the total weight of an action in keeping with a completely evil outcome might be greater than that of one tending to further a desirable end. Suppose that in Germany under Hitler it appeared that one hundred thousand Jews would probably be bayoneted to death. Should I, if a German, have suggested merely a less brutal execution by gas—thus quite possibly doing *some* good—or should I have cried out against the whole idea, quite probably having no discernible influence? And, if I decided on the former, should I have claimed credit as a "realist" and decried as "unrealistic" any who advised the society to let the Jews live?

In the second place, the problem of actually assigning "probabilities" must be faced—some aspects of which are relegated to our third and fourth points. At present we may consider the matter from a relatively uncomplicated point of view. The task of assignment involves knowing attitudes, including in some sense their "strength," and the force of the impact of each suggestion under consideration as tending to change them. Diffidence about analyzing matters of "attitude" would become us, for there are indications that merely agreeing upon a scientific content for the term might keep sociologists busy for some time. However, it appears that an attitude rests upon at least these underlying factors: a value system, the "brute" elements provided by the senses, and theories relating these elements. Thus, basic to assigning "probabilities" would be a knowledge, with respect to each person affecting the adop-

tion of a policy, of how these factors combine in him to form attitudes, including what is the "marginal influence" of changes in the respective factors. Given such information, successful forecasting would require discerning also exactly what persons the advice would reach and in what form and, for each person reached, just what changes would occur in each of his attitude-making factors. (Since forecasts are, for the purposes in question, to run in terms of probability distributions, the knowledge required—whatever its nature—would be more rather than less complex than these statements suggest.)

In the case of an official economic adviser to one or a few immediate determiners of policy, presumably sufficient knowledge for a forecast might be possessed—although it would be naïve to take for granted that the enigma which man presents to man regularly yields to the degree of intimacy involved in such a relationship. However, to assay how appropriately the cited requirements might in general give pause to a forecaster, it would be well to recall what must be meant by "lines of action" open to economists as social advisers. These vary greatly as to immediacy of impact upon policy, ranging from the report of an official adviser, through systematic promotion (honest propaganda), down to a mere planting of seeds of thought whether in the classroom or in casual conversation. Evidently the overwhelming majority of "actions" exercise their effects quite indirectly. What is the "probability" that a policy-influencing marginal change in attitudes will result from planting an idea, or the means of arriving at good ideas, in the classroom or in an address or in social intercourse? With what degree of immediacy, both in point of time and in point of the number of intermediate impacts? A mere showing of difficulty would not invalidate the conception of a "probability" approach. But it would scarcely be extreme to suspect that estimates of "probability" would in the case of most expressions of espousal have a probable error so large as to render them "statistically" insignificant.

The knowledge stipulated as necessary was not characterized as sufficient for the appraisal of "probabilities." Indeed, contemplation suggests some mystery about the very nature of such a process in the kind of universe in question. These facts suggest a problem which for emphasis we may single out as our third point: a fundamental difficulty in the very notion of "probability" as a property of the force of a piece of advice. Unless the intent is simply to lead others to act under false impression of the results to be expected, advice consists of making evident the soundness of an idea and relying upon the resulting recognition of that soundness to cause action based upon it. The force at work changing attitudes is, then, "idea force." "Probability" implies a mechanical relation, some kind of quantitative continuity. But correct conclusions

cannot flow from treating "idea force" as if the law of conservation of energy applied to it; for, however an idea may get into a mind, it is capable of dying there or of gathering immense force. Moreover, a number of minds can be seeded with one expression of the idea. Potentially, then, the force may grow at an astronomical rate. All the determinants of whether it dies or gathers strength in a particular mind, we simply do not know. We do know, however, that that which is believed to be true has an appeal to the mind believing it, over and above the attraction it may have on other grounds: truth has a positive appeal in its own right. Although other appeals may swamp this one, there is no limit to the possibilities of its breaking through and causing action. The degree of apparent influence of the person holding an idea is, therefore, no measure of the potential effect of his giving utterance to it. If there is one belief fundamental to, and universal in, our culture, it is this notion that truth as such has power. Such justification as may exist for the hope of a better world lies here and here only. In the face of these considerations it seems doubtful, not merely whether we can effectively measure "probabilities" for different "actions" upon attitudes, but indeed whether any real meaning attaches to the conception.

In the fourth place, to guide oneself by a "probability" calculus is one thing, but to say then that all persons should do likewise is to fall little if at all short of nonsense. There might be some sort of rationality to urging that others espouse according to value weights only, so as to leave one or a few free to add the "probability" factor. The latter procedure implies estimating the current division of the forces of espousal and deciding whether one's own influence would suffice to change an inferior force into a superior. Evidently, then, much of the force exercised by others must have been somehow committed. If all, however, follow the "probability" principle, no one can commit himself until many others (nearly all?) have committed themselves. Thus, for keeping public affairs relatively free from the influence of the disinterested, the "probability" principle would be a reasonably effective device.

Since it would seem harsh to attribute to the "realist" a meaning so patently foolish, an attempt at a different interpretation may be appropriate. Although the inference does not appear obviously logical, could the actual meaning involve a process in which the many individual advisers, each with the "probability" factor in mind, somehow simultaneously determine their respective positions? If so, to be sure, the implications are still not attractive. Major economic policy, in so far as it is influenced at all by economists, apparently ought to be the product of infinite involutions of guesses by each about what others are guessing about what he is guessing about what they will advocate! However, for example, having advocated farm-price supports on grounds of their

"probability," it appears that one may take a fearless stand in favor of ninety per cent of parity as opposed to ninety-five per cent—unless, indeed, the probabilities are too much against that. It is a depressing picture of the rôle of representatives of that higher learning upon which much of the hope of social improvement has sometimes been supposed to depend.

In view of the preceding point, a fifth one is evident: the "probability" approach rests upon an ethical atomism which might reasonably be supposed long ago to have been barred by a well-established principle of ethics, that a precept is unacceptable for one man unless it would have an acceptable outcome when followed by all. In the face of this principle, how can the degree of immediate influence of a scholar upon practical affairs be deemed a matter of greater concern than the desirability of the direction of such influence as he does wield?

A sixth and major indictment of the "probability" approach, although contained in much of the preceding discussion, should be made explicit. Fundamental to such a procedure is the fact that, while believing one course to be the best, I say or allow it to be thought that I believe a different one to be the best. That is to say, the approach explicitly calls for the active or passive concealment of truth. It should scarcely be necessary to argue against an idea which so patently strikes at the foundations of scientific integrity.

If the thoughts assembled here are sound, men will best serve the cause of social welfare if they refrain both from disposing of opponents as "unrealistic," in our defined sense, and from bowing to fear of that charge in selecting their own positions on policy. Degrees of "probability" are incommensurable with degrees of value, and ethical considerations do not permit the former to outweigh the latter. The assignment of "probabilities," even with a highly oversimplified conception of their meaning, would in the great majority of cases be so difficult as to become absurd. The nature of "idea force," moreover, makes it doubtful whether any real meaning attaches to the very notion of "probabilities of success" of different lines of advice and whether, therefore, there can be any such weights to superimpose upon value weights. In any case, to call the "probability" approach proper for all who take a position on policy would be to advocate a practice which would remove any rational basis which "probability" estimates might be imagined to have, by reducing all policy position-taking to a logically impossible universal mutual anticipation ending only in universal support of the *status quo* (in so far as change depends on deliberate human planning), and which would of course divorce policy selection from reference to value. Finally, the required concealment of truth is intolerable to the most

fundamental conception of the scholar's reason for being. The "probability" approach must surely be rejected, to say nothing of its being considered prerequisite to respectability. Only one type of serious defense of a policy is open to an economist or anyone else: he must maintain that the policy is good. True "realism" is the same thing men have always meant by wisdom: to decide the immediate in the light of the ultimate. The economist must follow this ideal as best he can—in humility and in readiness to compare notions both of technical relations and of ultimate values.

"FULL EMPLOYMENT" 1955–1960—A FEASIBILITY TEST

By ROBERT STANLEY WEINBERG*

It is my purpose in this paper to outine a set of supply and demand requirements for "full-employment" in the period 1955 through 1960. In Part I a simple model defining "full-employment" in terms of total output, Gross National Product, is developed. Part II considers recent past trends and empirically projects a set of annual "full-employment" GNP levels consistent with the model outlined in Part I. Part III contrasts the total supply estimates derived in Part II with the projected demands of the consumer, business, government, and foreign sectors of the economy to test the feasibility of "full employment" under various assumptions. Finally, Part IV summarizes the implications and feasibility of "full employment" through the 1955–1960 period

I. *"Full Employment," a Simple Model*

This oversimplified model considers the interrelationships between seven broad variables, the population (P), the labor force (L), employment (E), unemployment (U), the length of the average work week in hours (H), productivity, the output per man-hour labor input (T), and total demand (GNP).

The interrelationship between these variables can be defined with the following set of equations:

$$L = f(P) \qquad \text{I:I}$$

The labor force is a function of the population, that is, the size of the labor force is related to the size of the population.

$$L - E = U \qquad \text{I:II}$$

This equation is merely the definition of unemployment. Unemployment is equal to the difference between the labor force and employment.

$$\frac{GNP}{(T)(H)} = E \qquad \text{I:III}$$

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Equation I:III defines the level of employment as the quotient of GNP divided by the product of productivity, output per man hour, times the average hours worked.

At this point we may now introduce an eighth variable, minimum frictional unemployment (U_f), or that level of unemployment that will be acceptable at a "full-employment" level. By definition, "full employment" will exist when $U = U_f$. The exact level of demand required to attain a level of "full employment" is that level of demand that yields the identity

$$U = U_f \qquad \text{I:IV}$$

To arrive at that level of demand required to attain exact "full-employment" equations I:II through I:IV can be solved simultaneously to yield equation I:V,

$$\overline{GNP} = [L - U_f](T)(H) \qquad \text{I:V}$$

where $\overline{GNP}$ is equal to the level of demand required to sustain exact "full employment."

If U_f is taken as either an absolute (*i.e.*, millions of workers) or a relative (*i.e.*, a percentage of the labor force) constant, equation I:IV determines $\overline{GNP}$ in terms of three variables, L, T, and H.

The expression $L-U_f$ can be replaced by $\overline{E}$ which represents the level of employment at a "full-employment" level. Similarly the product of T times H can be replaced by a single term Z, where Z represents the output of one worker, *i.e.*, the workers' hourly rate of output times the number of hours worked.

Equation I:V is now reduced to simply:

$$\overline{GNP} = (\overline{E})(Z) \qquad \text{I:VI}$$

For the purposes of future discussion we will consider projected levels of $\overline{E}$ as being primarily the resultant of a set of unique combinations of various demographic, sociological, and economic factors, Z will be considered as being primarily the resultant of a set of unique combinations of various technological and economic factors.

The supply and demand estimates developed below should not be considered as forecasts, but rather as long-term trend projections. These projections assume a continuation of the basic trends indicated below. It should be remembered that in reality, at best, we would expect the "actual" levels of supply and demand to fluctuate about the trend values shown below.

II. *Some Empirical Projections of "Full-Employment" Levels*

Part I presented a generalized oversimplified model defining full employment in terms of "full-employment" levels of Gross National

Product. In this section a set of "full-employment" GNP levels will be projected consistent with the basic conditions outlined in the derivation of equation I:VI above.

We will begin our analysis with a projection of the size and occupational distribution of the labor force for the six-year period 1955–1960 as shown in Table I.

TABLE I.—THE LABOR FORCE EMPLOYMENT AND UNEMPLOYMENT, 1955–1960

(millions of workers)

	1955	1956	1957	1958	1959	1960
Total Labor Force	69.1	70.0	70.8	71.7	72.6	73.5
Armed Forces	3.0	2.5	2.2	2.0	1.7	1.7
Civilian Labor Force	66.1	67.5	68.6	69.7	70.9	71.8
Total Employment	64.5	65.8	66.9	67.9	69.1	70.0
Nonagricultural	52.0	53.5	54.8	55.8	57.2	58.0
Agricultural	6.5	6.4	6.3	6.2	6.1	6.1
Government	6.0	5.9	5.8	6.0	5.8	5.9
Federal	1.9	1.7	1.5	1.5	1.2	1.2
National Defense	.9	.75	.56	.55	.35	.35
Non-National Defense	.96	.95	.94	.92	.9	.9
State and Local	4.1	4.2	4.3	4.5	4.6	4.7
School	1.7	1.8	1.9	2.0	2.1	2.2
Nonschool	2.4	2.4	2.4	2.5	2.5	2.5
Unemployment	1.6	1.7	1.7	1.7	1.8	1.8

Table I is constructed on seven basic assumptions. It will be noted the part played by the federal government "as an employer," *i.e.*, the size of the armed forces and the size of federal government employment are minimized. This assumption implies a termination of the "cold war" by not later than 1954 with a transformation to a complete peace-time economy beginning about 1955 (the implications of alternate assumptions will be discussed in greater detail below). The basic assumptions underlying Table I are as follows:

1. The total labor force estimates are based on a Bureau of the Census projection.[1]

2. The size of the armed forces is based on the assumption that a peak of some 3.5 to 4.0 millions will be reached in 1954 to be followed by a period of gradual demobilization from 1955 through 1959 reducing the

[1] U. S. Bureau of the Census, *Current Population Reports—Labor Force*, Ser. P-50, No. 42, "A Projected Growth of the Labor Force in the United States under Conditions of High Employment: 1950–1975," Dec. 10, 1952, p. 7; U. S. Bureau of the Census, *Current Population Reports—Population Estimates*, Ser. P-25, No. 58, "Provisional Revision of the Total Population of the United States: July 1, 1953 to 1960," April 17, 1952, p. 1 (see also P-25, No. 43, Aug. 10, 1950, "Illustrative Projections of the Population of the United States 1950 to 1960," p. 11).

total armed forces to a new peace-time high of 1.75 millions.

3. The total civilian labor force is the total labor force minus the armed forces.

4. Total civilian employment is taken as .975 times the total civilian labor force. We will assume a minimum acceptable level of frictional unemployment (U_f) of 2.5 per cent. (This assumption will be discussed more fully below).

5. The projected declines in agricultural employment are based on an extrapolation of the 1900–1950 trend, adjusted to weight the more recent post-World War II experience more heavily.

6. Government employment is estimated in two components:

(a) Federal government civilian employment is based on an annual cross-section analysis of 1945 through 1949 data taken from Fabricant's study.[2] Federal government civilian employment is projected in two components: National defense and non-national defense employment. State and local government is also projected as the sum of two components, nonschool and school employment. Federal national defense activity employment is assumed to be a function of the size of the armed forces assuming the following rate of civilian employees per one thousand men in the armed forces: 1955–1956, 300 civilian employees; 1957–1958, 250 civilian employees; 1959–1960, 175 civilian employees. (In 1947–1949 there were about 348 civilian employees for each 1000 men in the armed forces, in 1937–1939 this ratio was 522 per 1000, and in 1927–1929, 348 per 1000.) Nonnational defense activity civilian employment in 1955 is assumed to be about 10 per cent below the 1947–1949 average; gradual declines are projected thereafter. These declines are assumed to be the product of two factors, the demobilization of the armed forces and related defense efforts and the streamlining of the other nondefense sectors (agencies) of government.

(b) State and local government employment represents a projection of three-decade 1920–1950 trend with an upward adjustment to take into account the levels and composition of the population,[3] particularly the sharp increases in the projected population of primary and secondary school age. Total state and local government employment in 1960 is projected at about 1.4 million above the 1947–1949 average. Nonschool employment is projected at about .5 million above the 1947–1949 average, school employment is projected about .9 million above the 1947–1949 average.

7. Those employed workers who are neither employed in agriculture

[2] Solomon Fabricant, *The Trend of Government Activity in the United States Since 1900* (New York, 1952), Tables B-5 (p. 180), B-6 (p. 182), B-7 (p. 186), B-13 (p. 196).

[3] See footnote 1.

or in government are assumed to be employed in nonagricultural industries.

Equation I:VI above expressed Gross National Product as the product of the number of workers times the annual output per worker. Once we establish the size and distribution of the labor force we merely require an estimate of the workers' annual output to develop our GNP projections.

We will project "full-employment" levels of Gross National Product ($\overline{GNP}$) as the sum of three components: (1) private nonagricultural GNP (GNP_n); (2) private agricultural GNP (GNP_a); (3) gross government product (GGP); where

$$\overline{GNP} = \overline{GNP_n} + \overline{GNP_a} + \overline{GGP} \qquad \text{(II:I)}$$

and:

$\overline{GNP_n}$, $\overline{GNP_a}$ and $\overline{GGP}$ = that level of product required to maintain that level of employment indicated in Table I.

To arrive at an estimate of the annual output per worker for the private sectors of the economy we require a projection of the workers' productivity and a projection of the average hours worked. The output of the government sectors is, by definition, the compensation of general government employees.

Two productivity projections have been developed, one for the agricultural sector, and one for the nonagricultural sector. Both of these indices are expressed in terms of 1951 constant dollar Gross Private Product per man-hour labor input. They were developed in the following manner. A set of annual estimates for the 1946 through 1951 period were developed based on the employment and hours data from the Bureau of the Census P-50 series and the Gross Private Product and supplemental employment data from the 1951 National Income Supplement of the *Survey of Current Business.* These estimates were then compared with those developed by a more careful cross-section analysis for three years 1949 through 1951 to yield a 1950 "adjusted trend value" for Gross Private Farm Product and Gross Private Nonfarm Product per man-hour labor input (see Table II). (The adjusted trend value is an estimate of the 1950 output per man hour adjusted to take into account an estimate of those changes, which reflect only short-term conditions.)

Gross Private Farm Product per man-hour labor input was then projected through 1960 based on an average of 1950–1960 decade, annual rate of growth of about 2.4 per cent. Gross Private Nonfarm Product per man-hour labor input was projected through 1960 assuming a 2.5 per cent average annual rate of growth.

Recent studies[4] have indicated that Gross Private Farm Product per man-hour labor input has increased at an average annual rate of 1.2 per cent through the four-decade 1909–1941 period. During this same period Gross Private Nonfarm Product per man-hour labor input has

TABLE II.—PROJECTED OUTPUT PER MAN-HOUR, AVERAGE WEEKLY HOURS, AND AVERAGE ANNUAL OUTPUT PER WORKER

	1950[a]	1955	1956	1957	1958	1959	1960
Projected Output per Man-Hour Labor Input							
Gross Private Nonfarm (1951 dollars)	2.67	3.02	3.10	3.17	3.25	3.33	3.42
Gross Private Farm (1951 dollars)	1.39	1.56	1.59	1.63	1.67	1.70	1.74
Projected Average Weekly Hours							
Private Nonagricultural		38.9	38.7	38.5	38.3	38.1	37.9
Private Agricultural		47.5	47.5	47.0	47.0	46.5	46.5
Average Annual Output per Worker							
Nonagricultural (1951 dollars)[b]		6109	6237	6346	6474	6597	6741
Agricultural (1951 dollars)[c]		3853	3927	3994	4081	4111	4207
Government—Federal							
Armed Forces (1951 dollars)[d]		3300	3300	3300	3300	3300	3300
Civilian Government (1951 dollars)[d]		4200	4200	4200	4200	4200	4200
Government—State and Local							
School (1951 dollars)[d]		3500	3500	3500	3500	3500	3500
Nonschool (1951 dollars)[d]		3200	3200	3200	3200	3200	3200

[a] Adjusted trend value.

[b] Average weekly hours (private nonagricultural) times 52 times output per man-hour (gross private nonfarm).

[c] Average weekly hours (private agricultural) times 52 times output per man-hour (gross private farm).

[d] Annual output of government employees is taken as equal to their annual wages and salaries (plus supplements).

increased at an average annual rate of about 1.9 per cent. In the present paper we expect farm productivity to increase at about twice the four-decade pre-World War II rate. This increased rate is expected to be the product of many new technological factors (*i.e.*, the development of new and more efficient farm machinery, increased mechanization, new chemical fertilizers, etc.) and general improvements in farming techniques.

The projected annual increase in nonfarm productivity exceeds the prewar rate through 1960. This increase assumes a continuation of the recent high levels of producers' expenditures for new plant and equipment and a continual improvement in the efficiency of this equipment.

[4] John W. Kendrick, *National Productivity and Its Long-Term Projection*, an unpublished paper presented before the May 1951 National Bureau of Economic Research Conference on Research in Income and Wealth. (See also, George G. Hagedon, *Productivity Gauge of Economic Performance*, National Association of Manufacturers, Econ. Pol. Div. Ser., No. 53, Sept. 1952 [New York, 1952].)

An analysis of preliminary data indicates an average rate of increase in nonfarm productivity of about 3.5 per cent in the postwar 1947–1951 period. While a long-term continuation of this high short-term rate of growth is questionable a continuation of a high-level investment program coupled with the gradual secular shift of workers to the higher productivity industries should assure an above average rate of increase at least through the 1950–1960 decade.

In 1951 agricultural workers averaged a 47.8 hour work week as compared to a 39.6 hour average work for nonagricultural workers.[5] Projected annual average weekly hours through 1960 are given in Table II.

From the projected figures for output per man-hour and for average weekly hours we may develop a set of average annual output per worker estimates by simple multiplication (see Table II).

The annual output of government employees is taken as equal to their annual wages and salaries (plus supplements). Our projections of average annual output per government worker assume a slight improvement in the "average rank" of members of the armed forces and the "average grade" of civilian government employees; that is, we assume that the ratio of "lower rank/grade" employees to "higher rank/grade" employees will decrease. Because of the difficulties involved in projecting changes in constant dollar government product, *i.e.*, shifts in the internal composition (the grade and rank structure) a constant average value is assumed throughout the 1955–1960 period.

We have now developed a set of average annual output estimates for each of the classes of workers in Table I. With the data given in Tables I and II we may now develop a set of "full-employment" estimates of Gross National Product through a simple process of multiplication and summation (see Table III).

The figures for Total Gross National Product in Table III show that level of total demand required to sustain a level of "full employment" consistent with the assumptions noted in Part II. In 1950 Gross National Product (in 1951 constant dollars) stood at 303.3 billion dollars. The next to the last line of Table III shows "full-employment" GNP relative to 1950 = 100.

"Full employment" through the 1955–1960 period would require an average annual rate of growth in aggregate demand of about 3.9 per cent through the 1950–1960 decade. To attain the 374.3 billion dollar level in 1955 would require an average annual rate of growth of about

[5] U. S. Bureau of the Census, *Current Population Reports—Labor Force*, Ser. P-50, No. 40, "Annual Report on the Labor Force 1951," May 19, 1952, Table 10 (p. 24) adjusted for workers "with a job but not at work" Table 2 (p. 16).

TABLE III.—"FULL-EMPLOYMENT" LEVELS OF GROSS NATIONAL PRODUCT

	1955	1956	1957	1958	1959	1960
Nonagriculture—$\overline{GNP}_n$ (1951 billion dollars)[a]	317.7	333.7	347.8	361.2	377.3	391.0
Agriculture—$\overline{GNP}_a$ (1951 billion dollars)[a]	25.0	25.1	25.1	25.3	25.1	25.7
Government—$\overline{GGP}$ (1951 billion dollars)	31.6	29.7	28.3	27.8	26.3	26.7
Federal (1951 billion dollars)	17.7	15.4	13.7	12.8	11.0	11.0
Armed Forces (1951 million dollars)[b]	9900	8250	7425	6600	5775	5775
Civilian Government (1951 million dollars)[b]	7812	7140	6300	6174	5250	5250
State and Local (1951 billion dollars)	13.9	14.3	14.6	15.0	15.3	16.7
School (1951 million dollars)[b]	5950	6300	6650	7000	7350	7700
Nonschool (1951 million dollars)[b]	7680	7680	7680	8000	8000	8000
Total Gross National Product—$\overline{GNP}$ (1951 billion dollars)	374.3	388.5	401.2	414.3	428.7	443.4
$\overline{GNP}$ Relative to 1950=100	123.4	128.1	132.3	136.6	141.3	146.2
Annual Increase (per cent)		3.81	3.28	3.25	3.44	3.47

[a] Average annual output per worker (1951 dollars), taken from Table II, times number of workers employed (millions of workers), taken from Table I.

[b] Average annual earnings per worker (1951 dollars), taken from Table II, times number of workers employed (thousands of workers), taken from Table I.

4.3 per cent between 1950 and 1955. The 443.4 billion level stipulated for 1960 would require slightly less than a 3.5 per cent annual rate of growth during the second half of the decade. Table IV compares these required rates of growth with some selected historical periods.

TABLE IV.—ANNUAL RATES OF GROWTH CONSTANT DOLLAR GROSS NATIONAL PRODUCT[a]

(per cent)

1910–1950	3.0	1946–1950	2.8
1929–1950	2.8	1950–1960	3.9
1939–1950	4.9	1950–1955	4.3
1940–1950	4.5[b]	1955–1960	3.5

[a] All rates are approximate. The 1910–1950 rates are based on the slope of a fitted trend line. The other rates are merely based on the two terminal years only.

[b] If the growth rate is computed based on the 1939, 1940, 1941 and the 1949, 1950, 1951 means, the rate of growth is slightly less, about 4.3 per cent.

Table V compares the projected increases in Gross National Product with the Bureau of the Census revised medium series population projections. From Table V we note that our population is expected to increase by almost 13 per cent over the 1950 level with "full-employment" output increasing about 46 per cent. If "full employment" is to be maintained, Gross National Product per capita will have to increase about

30 per cent over the 1950 level. A 30 per cent increase during the 1950 decade would imply a 2.66 average annual rate of growth (a somewhat smaller average annual rate of growth of 2.47 per cent is implied during the second half of the decade).

A superficial examination of Tables IV and V, would lead to the conclusion that we could expect 1955–1960 to be a period of "full employment" (consistent, with the assumptions developed above) if a rate of growth somewhat greater than the 1910–1950 period but less than the 1939–1950 period could be maintained. In the light of the recent high growth rates (especially the 1950–1952 rate of 5.5 per cent) the 1955–1960 required 3.9 per cent rate of growth seems to appear reasonable. Indeed, even the 4.3 per cent 1950–1955 rate does not seem unreasonable. Table IV, however, does not offer a complete picture. It would be foolhardy to attempt any projection based on recent high growth rates without carefully analyzing the nature of each of the component demands which comprise aggregate demand (GNP). Before we may attempt to measure the feasibility of attaining our required growth rates we must answer a series of related basic and crucial questions. For example: (1) What portion of our recent high levels of aggregate demand represents "one time" nonrecurring demand, and what portion represents demands which might be expected to continue through the 1950–1960 decade? (2) To what extent has the recent high level of government (defense) expenditures directly and indirectly created "a temporary short term upsurge" in Gross National Product? (3) Will there be sufficient private (consumer and business) demand to maintain a high level of Gross National Product when the direct and indirect influences of government spending level off and decrease?

TABLE V.—GROSS NATIONAL PRODUCT PER CAPITA

	GNP (1951 billions)	Population (millions)	GNP per Capita (1951 dollars)	GNP	Population (1950=100)	GNP per Capita
1950	303.3	151.7	1999	100.0	100.0	100.0
1955	374.3	163.2	2294	123.4	107.6	114.7
1956	388.5	164.9	2356	128.1	108.7	117.8
1957	401.2	166.5	2409	132.3	109.8	120.5
1958	414.3	168.1	2464	136.6	110.8	123.2
1959	428.7	169.7	2526	141.3	111.9	126.4
1960	443.4	171.2	2590	146.2	112.8	129.6

These are only a few of the many questions which must be answered before we can appraise the probabilities of attaining "full employment."

Part III will offer a systematic analysis of the future demand for various Gross National Product components. As we have already noted (page 862) the part played by government both as an "employer" and a "consumer" will be held to a minimum.

III. *The Structure of Demand 1955–1960*

Three sets of demand projections will be developed in this section. The first set of estimates (Variant I) represent projections of the maximum levels of demand we might expect if the high growth rates of the last decade continue. These projections will be developed below in detail. Variants II and III will represent medium and low level demand projections, respectively. These alternate projections will be developed from the Variant I projections by merely changing the basic assumptions underlying their derivation.

It should be emphasized that these demand estimates are not intended as forecasts, but rather as projections of the most probable levels of demand associated with each of the various assumptions noted below.

In Part II we developed a set of estimates of the total output (supply) of the economy under conditions of "full employment." The demand estimates developed below are, in effect, complements of these supply estimates. They are intended to answer the question, "How much can we expect the economy to absorb (demand) during a period of high level economic activity?"

Personal Consumption Expenditures 1955–1960

Projected levels of personal consumption expenditures which we might expect under conditions of high employment (if the consumption trends of the last two decades continue) are based upon (a) projected levels of per capita consumption, showing an improvement in the standard of living, and (b) projected increases in the population. Per capita personal consumption expenditure rates have been projected on the basis of a time series analysis of the personal consumption expenditure data contained in Table XXX of the National Income Supplement of the *Survey of Current Business*.[6] For the purpose of analysis each of the 178 categories of consumption expenditure listed in that table have been aggregated into ten broad consumption classifications, as shown in Table VI.[7]

[6] U. S. Department of Commerce, Office of Business Economics, *National Income and Product of the United States 1929–1950* (Washington, 1951), pp. 192–99. (See also, *Survey of Current Business*, July 1952, pp. 24–25.

[7] Of the 178 items listed in Table XXX of the National Income Supplement, 53 are included in the first nine classifications, and account for almost 92 per cent of total personal consumption expenditures. The remaining 125 items are included in a tenth, residual classification, "Other Consumption." "Food I" includes food purchased for off-premise consumption, and food produced and consumed on farms. "Food II" includes purchased meals and beverages,

TABLE VI.—PERSONAL CONSUMPTION EXPENDITURES BY CONSUMPTION COMPONENT
(1951 dollars per capita)

	Actual	Projected					
	1951	1955	1956	1957	1958	1959	1960
Food I	350	381	390	398	406	415	423
Food II	98	130	135	140	145	151	157
Clothing	129	158	161	164	167	170	173
Housing	137	152	158	164	171	177	184
Fuel, Power and Light	46	51	52	53	54	56	57
Housefurnishings	53	65	67	69	70	72	74
Miscellaneous I	188	210	215	220	225	231	236
Miscellaneous II	114	123	125	128	130	132	134
Supernumerary Durables	120	160	168	176	184	193	202
Other Consumption	112	120	123	125	127	130	132
Total	1347	1550	1594	1637	1679	1727	1772

Consumption expenditures for each of the ten classifications were computed annually from 1929 through 1951. These current dollar series were then adjusted to take into account changes in the price level and our increasing population, and an exponential trend ($Y_c = ab^x$) was fitted to each of the constant dollar per capita consumption series.[8] Table VI

and food furnished government and commercial employees. "Miscellaneous I" includes tobacco products and smoking supplies, toilet articles and preparations, lighting supplies, cleaning and polishing preparations, miscellaneous household paper products, telephone, postage, drug preparations and sundries, physicians and dentists, privately controlled hospitals and sanitariums, purchased local transportation (less taxicab fares), gasoline and oil, automobile insurance (net payments), motion pictures, magazines, newspapers, etc., and religious and welfare activities. "Miscellaneous II" includes cleaning, dyeing, pressing, etc., laundering in establishments, barber shop services, beauty parlor services, baths and masseurs, total personal business expenditures, automobile repair, greasing, etc., nondurable toys and sport supplies, and private education and research. "Supernumerary Durables" include such items as jewelry and watches, refrigerators, washing and sewing machines, miscellaneous electrical appliances, radio and television receivers, new cars and net purchases of used cars.

[8] The resulting trend equations are as follows:

Food I	$Y_c = 227\ (1.0211)^x$	III:I
Food II	$Y_c = 49\ (1.0384)^x$	III:II
Clothing	$Y_c = 99\ (1.0182)^x$	III:III
Housing	$Y_c = 87\ (1.0385)^x$	III:IV
Fuel, Power and Light	$Y_c = 27\ (1.0242)^x$	III:V
Housefurnishings	$Y_c = 33\ (1.0254)^x$	III:VI
Miscellaneous I	$Y_c = 114\ (1.0240)^x$	III:VII
Miscellaneous II	$Y_c = 79\ (1.0175)^x$	III:VIII
Supernumerary Durables	$Y_c = 43\ (1.0473)^x$	III:IX
Other Consumption	$Y_c' = 71\ (1.0184)^x$	III:X

where Y_c = the trend value of per capita constant dollar consumption
X = the year minus 1929 (the year minus 1939 for equation III:IV)

All of the above equations with the exception of equation III:IV are fitted to 1929–1951 data. Equation III:IV is fitted to 1939–1951 data. Equations III:I and III:VIII have been adjusted to allow greater weight to post 1939 consumption trends.

presents a set of per capita consumption projections generated from the ten trend equations. It should be emphasized that these projections are not intended as forecasts, but rather as estimates of the per capita levels of consumption we might expect in a period of "high level employment," if the consumption trends established above continue.

The per capita consumption estimates, Table VI, may be converted to annual expenditure estimates by merely multiplying each per capita estimate by an appropriate population estimate. Table VII shows the

TABLE VII.—PERSONAL CONSUMPTION EXPENDITURES BY CONSUMPTION COMPONENT

(billions of 1951 dollars)

	Actual	Projected					
	1951	1955	1956	1957	1958	1959	1960
Food I	54.0	62.2	64.3	66.3	68.2	70.4	72.4
Food II	15.1	21.2	22.3	23.3	24.4	25.6	26.9
Clothing	19.9	25.8	26.5	27.3	28.1	28.8	29.6
Housing	21.2	24.8	26.1	27.3	28.7	30.0	31.5
Fuel, Power and Light	7.1	8.3	8.6	8.8	9.1	9.5	9.8
Housefurnishings	8.2	10.6	11.0	11.5	11.8	12.2	12.7
Miscellaneous I	29.1	34.3	35.4	36.6	37.8	29.2	40.4
Miscellaneous II	17.7	20.1	20.6	21.3	21.9	22.4	22.9
Supernumerary Durables	18.6	26.1	27.7	29.3	30.9	32.8	34.6
Other Consumption	17.2	19.6	20.3	20.8	21.3	22.1	22.6
Total	208.1	253.0	262.8	272.5	282.2	293.0	303.4

annual expenditure equivalent of Table VI (per capita consumption times the appropriate Bureau of the Census revised medium series population projection, see Table V).

The Demand for Private Residential Construction, 1955–1960

Table VIII shows the development of total nonfarm housing needs from 1955 through 1960. The data used in this table are based on the 1950 Census of Housing.[9] The total potential housing need during the 1955–1960 period is estimated at 7200 thousand housing units.

Although the annual levels of residential construction can be expected to fluctuate from year to year, we will simply assume one-sixth of the 7,200,000 required units will be constructed annually through the six-year period.

To convert the housing unit estimates into "dollar value of the construction" estimates we assume that the price of an "average housing unit" will be 9300 constant (1951) dollars. This average price estimate assumes that the 1955–1960 cost of an "average housing unit" will be

[9] U. S. Bureau of the Census, 1950 Census Population and Housing, *Housing* Vol. I, *General Characteristics*, "Part I." (Washington, 1953). See also footnote 11.

TABLE VIII.—TOTAL POTENTIAL NONFARM HOUSING NEEDS 1955–1960
(thousands of housing units)

Household Formation, March 1950–July 1960	7,270
Replacement Needs:	
Dilapidated Units in Use, 1950	2,500
One Third of the Units Which Will Become Dilapidated during the Decade	470
Losses from Disaster	250
Removal of Temporary Public Housing	600
Removal of Three Quarters of the Marginal Dwelling Units Added during the 1940's	520
Reconversion of One Third of the Apartment Conversions Added in the 1940's	600
Requirement to Establish a 4 per cent Vacancy Ratio for Rent or Sale	990
Total Potential Housing Needs 1950–1960	13,200
Less: Estimated Housing Starts 1950–1954	6,000
Total Potential Housing Needs 1955–1960	7,200

about five per cent lower than that of an "average housing unit" during the 1950–52 period. Since this average cost is expressed in 1951 dollars the projected decrease reflects an anticipated change in the "product mix" of the average, *i.e.*, a trend toward fewer high-price and greater low-price units. Table IX shows the derivation of the annual average nonfarm construction estimate for the 1955–1960 period.

TABLE IX.—AVERAGE ANNUAL EXPENDITURES FOR NONFARM RESIDENTIAL CONSTRUCTION 1955–1960

Total Potential Housing Needs 1955–1960	7,200,000 housing units
Average Annual Potential Housing Needs 1955–1960 (7,200,000/6)	1,200,000 housing units
Estimated Average Cost per Unit	9,300 1951 dollars
Average Annual Expenditure for Nonfarm Residential Construction [(1,200,000) (9,300)]	11.2 1951 billions

In addition to the estimated 11.2 billion dollar outlays for new nonfarm residential construction we can expect about another 1.0 billion dollars a year will be spent on additions and alterations of existing units. Farm residential construction is estimated at about 800 million dollars a year. Table X shows the average annual expenditures for residential construction through the 1955–1960 period.

TABLE X.—AVERAGE ANNUAL EXPENDITURES FOR RESIDENTIAL CONSTRUCTION 1955–1960
(1951 billions)

Nonfarm Residential Construction	11.2
Additions and Alterations	1.0
Farm Residential Construction	.8
Total Residential Construction	13.0

Producers' Durable Equipment and Nonresidential Construction 1955–1960

If the recent past trends in the interrelationship between (a) productivity and the stock of producers' durable equipment per worker, and (b) the stock of nonresidential construction and the stock of producers' durable equipment continue through the 1960 decade we may expect a high level of investment through the 1955–1960 period. Table XI shows the projected demand for producers' durable equipment and nonresidential construction.

TABLE XI.—THE DEMAND FOR PRODUCERS' DURABLE EQUIPMENT AND NONRESIDENTIAL CONSTRUCTION 1955–1960

(1951 billions)

	Producer's Durable Equipment	Nonresidential Construction	Total
1955	29.5	11.8	41.3
1956	34.3	13.3	47.6
1957	34.2	13.0	47.2
1958	35.6	13.5	49.1
1959	39.2	14.1	53.3
1960	40.7	14.1	54.8

The estimates in Table XI were developed in the following manner. A set of estimates of the stock of nonresidential construction and producers' durable equipment through the 1929–1952 period was derived through the use of a perpetual inventory method[10] assuming a forty-year straight line economic life for nonresidential construction and a fifteen-year straight line economic life for producers' durable equipment. The interrelationship between productivity and the stock of producers' durable equipment per worker (excluding government workers) was determined by fitting the simple linear regression equation,

$$P = a + b \cdot S/W \qquad \text{III:XI}$$

where:

P = productivity, in terms of constant dollar Gross Private Product per man-hour labor input

S = the stock of producers durable equipment

W = the number of private (nongovernment) workers

a and b are regression coefficients,

to ten annual observations covering the 1939–1941, 1946–1952 periods. A simple least-squares technique yielded the following results:

[10] Raymond W. Goldsmith, "A Perpetual Inventory of National Wealth," *Studies in Income and Wealth*, Vol. XIV, National Bureau of Economic Research (New York, 1952), pp. 6–73, especially pp. 14–17.

$$P = 1.16 + .000531927\ S/W \qquad \text{III:XII}$$
$$(r = .9840,\ r^2 = .9683,\ S_y = .049)$$

Given a productivity projection, equation III:XII may be solved for S/W to estimate the stock of producers' durable equipment required per worker to maintain the stipulated level of productivity.

$$S/W = \frac{P - 1.16}{.000531927} \qquad \text{III:XIII}$$

If we substitute a weighted average (weighted by the total hours worked) of the productivity projections given in Table II above into equation III:XIII, we may develop a projection of the stock of producers' durable equipment per worker required to maintain the secular increase in productivity projected in Part II (see Table XII). To arrive

TABLE XII.—THE ANNUAL DEMAND FOR PRODUCERS' DURABLE EQUIPMENT 1955–1960

	1955	1956	1957	1958	1959	1960
Gross Private Product per Man-Hour Labor Input (1951 dollars)	2.83	2.91	2.98	3.06	3.14	3.23
Stock of Producers' Durable Equipment per Worker[a] (1951 dollars)	3140	3290	3422	3572	3722	3892
Projected Number of Nongovernment Workers[b] (millions)	58.5	59.9	61.1	62.0	63.3	64.1
Total Stock of Producers' Durable Equipment (1951 billions)	183.7	197.1	209.1	221.3	235.5	249.3
Net Annual Expansion Requirement (1951 billions)	9.9	13.4	12.0	12.2	14.2	13.8
Replacement Requirement—Pre-1953 Equipment (1951 billions)	15.9	15.2	14.2	13.1	12.3	11.6
Replacement Requirement—Post-1953 Equipment (1951 billions)	3.7	5.7	8.0	10.3	12.7	15.3
Total Requirement (1951 billions)	29.5	34.3	34.2	35.6	39.2	40.7

[a] From equation III:XIII.
[b] From Table I.

at an estimate of the total stock of producers' durable equipment required we merely multiply the projected per worker requirements by a projection of the number of nongovernment workers.

The total demand for producers' durable equipment is equal to the net annual requirement (for expansion) plus the "depreciation" accrued on the already existing stock of equipment (for replacement). Table XII shows the projected annual demand for producers' durable equipment based on the net annual requirements shown above and a fifteen-year straight line economic life depreciation assumption. (Note: The pre-

1953 replacement requirement represents an uncentered fifteen-year moving average of constant dollar expenditures for producers' durable equipment. The post-1953 requirement represents one-fifteenth of cumulated expenditures beginning with 1953.)

Throughout the postwar (1947–1952) period a high correlation was observed between the total stock of producers' durable equipment and the total stock of nonresidential construction. This interrelationship is best described by the simple regression equation.

$$C = a + b\,S \qquad \text{III:XIV}$$

where:

C = total stock of non-residential construction
S = total stock of producers' durable equipment
a and b are regression coefficients

If we apply a simple "least squares technique" to six annual postwar observations (1947–1952) equation III:XIV becomes,

$$C = 93.185 + .3959\,S \qquad \text{III:XV}$$

$$(r = .9935,\ r^2 = .9870,\ S_y = .698)$$

From equation III:XV we can, given a projection of the stock of producers' durable equipment, estimate the required stock of nonresidential construction. Table XIII shows the stock of nonresidential construction required (from equation III:XV) to support the stock of producers' durable equipment indicated in Table XII, and also shows

Table XIII.—The Annual Demand for Nonresidential Construction 1955–1960
(1951 billions)

	1955	1956	1957	1958	1959	1960
Stock of Nonresidential Construction[a]	165.9	171.2	176.0	180.8	186.4	191.9
Net Annual Expansion Requirement	3.9	5.3	4.8	4.8	5.6	5.5
Replacement Requirement (Pre-1953 Construction)	7.3	7.1	7.0	6.8	6.7	6.5
Replacement Requirement (Post-1953 Construction)	.6	.9	1.2	1.5	1.8	2.1
Total Requirement	11.8	13.3	13.0	13.5	14.1	14.1

[a] Obtained by substituting the stock of producers' durable equipment projected from Table XII into equation XI:XV.

the projected annual demand for nonresidential construction on the basis of these requirements together with a replacement requirement based on a forty-year straight line economic life depreciation assumption.

Business Demand for Inventories 1955–1960

The projected demand for inventories (the net change in business inventories) represents the first differences of a total inventory series developed by substituting the projected values of Gross National Product (Table III) into a simple regression equation describing the 1947–1952 interrelationship between total business inventories and Gross National Product (see Table XIV).

TABLE XIV.—NET CHANGE IN BUSINESS INVENTORIES 1955–1960
(1951 billions)

1955	+2.7	1958	+2.7
1956	+2.8	1959	+2.8
1957	+2.5	1960	+3.0

Net Foreign Investment 1955–1960

Our projections of the level of net foreign investment (Table XV) merely represent a consensus of the most recent available "expert opinion." They reflect the impact of the assumed gradual curtailment of government foreign aid spending (as indicated under the government demand sections of this paper).

TABLE XV.—NET FOREIGN INVESTMENT 1955–1960
(1951 billions)

1955	1.0	1958	1.7
1956	1.3	1959	1.9
1957	1.5	1960	2.0

The Demand of the Federal Government 1955–1960

Estimates of the demand of the federal government from 1955 through 1960 have been projected in two broad components, wages and salaries of government workers, and purchases from business (see Table XVI). The wages and salaries projections are taken from Table III. Federal government purchases from business are projected in three categories: national defense, other national security, other nondefense expenditures.

National defense purchases from business are based on the assumption that the average expenditure per member of the armed forces will be about 25 per cent higher than it was during the 1947–1950 period. The 1947–1950 period average (3970 1951 dollars) was developed by dividing national defense expenditures minus the sum of the payrolls of the armed forces plus the payrolls of the civilian employees of defense activities by the number of members of the armed forces. Other federal

TABLE XVI.—GOVERNMENT PURCHASES OF GOODS AND SERVICES 1955–1960
(1951 billions)

	1955	1956	1957	1958	1959	1960
Demand of the Federal Government	40.4	35.0	31.3	28.8	24.9	24.9
Wages and Salaries	17.7	15.4	13.7	12.8	11.0	11.0
Purchases from Business	22.7	19.6	17.6	16.0	13.9	13.9
National Defense	14.9	12.4	10.9	9.9	8.4	8.4
Other National Security	3.0	2.5	2.0	1.5	1.0	1.0
Other Nondefense	4.8	4.7	4.7	4.6	4.5	4.5
Demand of State and Local Governments	35.2	36.7	37.2	37.8	38.2	36.4
Wages and Salaries[a]	13.9	14.3	14.6	15.0	15.3	15.7
Purchases from Business[b]	5.3	5.4	5.6	5.8	5.9	6.1
Public Works	16.0	17.0	17.0	17.0	17.0	14.6
Schools	2.5	2.5	2.5	2.5	2.5	2.5
Hospitals	2.2	2.5	2.5	2.5	2.5	1.8
Highways and Other	11.3	12.0	12.0	12.0	12.0	10.3
Total Government Purchases	75.6	71.7	68.5	66.6	63.1	61.3

[a] State and local government product, Table III.
[b] Based on an assumed annual expenditure per worker of $1,250 in 1955 and an annual increase of $10 each year thereafter.

government purchases from business are projected on the assumption that they will be 15 per cent lower per general nondefense civilian worker than they were during the 1947–1950 period.

The Demand of State and Local Governments 1955–1960

Table XVI also shows the projected demand of state and local governments through the 1955–1960 period. The demand for personal services (wages and salaries) is taken from Table III. Purchases from business are based on the annual expenditures per state and local government worker during the 1946–1951 period adjusted to take into account a gradual secular "improvement" in the services provided by government. The projected expenditures for public works are extremely high and are without historical precedent. They are based on the estimates contained in *The Sustaining Economic Forces Ahead*,[11] assuming the "demand" for public works will be almost completely fulfilled during the 1950–1960 decade.

Table XVII summarizes the demand projections developed in Tables VI through XVI. The Variant I estimates assume a continuation of the recent high growth rates considered in detail in the preceding sections. Our Variant II and Variant III demand projections merely assume an

[11] Joint Committee on the Economic Report, *The Sustaining Economic Forces Ahead* (Washington, 1952), pp. 34–59. (See also, Federal Reserve Bank of Chicago, *Business Conditions*, Jan. 1953, pp. 12–15.)

across-the-board decline in the over-all growth rate, to a rate three-quarters, and one-half, the Variant I rate, respectively.

TABLE XVII.—THE STRUCTURE OF DEMAND 1955–1960

(billions of 1951 dollars)

	1955	1956	1957	1958	1959	1960
Variant I						
Personal Consumption Expenditures	253.0	262.8	272.8	282.2	293.0	303.4
Residential Construction	13.0	13.0	13.0	13.0	13.0	13.0
Producers' Durable Equipment	29.5	34.3	34.2	35.6	39.2	40.7
Nonresidential Construction	11.8	13.3	13.0	13.5	14.1	14.1
Net Change in Business Inventories	2.7	2.8	2.5	2.7	2.8	3.0
Net Foreign Investment	1.0	1.3	1.5	1.7	1.9	2.0
Government Purchases of Goods and Services	75.6	71.7	68.5	66.6	63.1	61.3
Total Demand	386.6	399.2	405.5	415.3	427.1	437.5
Variant II—Total Demand	372.3	381.4	385.9	392.9	401.3	408.6
Variant III—Total Demand	357.8	363.6	366.5	370.9	376.2	380.8

IV. *"Full Employment" 1955–1960*

This section will compare the "supply" projections developed in Part II with the "demand" projections developed in Part III. The supply estimates were based on a 97.5 per cent employment assumption; that is to say, they represent a projection of the levels of output required to provide employment for 97.5 per cent of the total civilian labor force. Frictional unemployment has been taken as 2.5 per cent. The 2.5 per cent level is somewhat arbitrary: it is based on consideration of the factors listed in *Employment and Unemployment.*[12]

TABLE XVIII.—EXCESS (+) OR DEFICIT (−) SUPPLY OVER DEMAND 1955–1960

(billions of 1951 dollars)

	Variant I Demand	Variant II Demand	Variant III Demand
1955	−12.3	+ 2.0	+10.5
1956	−10.7	+ 7.1	+24.9
1957	− 4.3	+15.3	+34.7
1958	− 1.0	+21.4	+43.4
1959	+ 1.6	+27.4	+52.5
1960	+ 5.9	+34.8	+62.6

We are now concerned with determining the "actual" levels of unemployment implicit to each of our three demand variants. Table XVIII

[12] Joint Committee on the Economic Report, *Employment and Unemployment* (Washington, 1950), pp. 56–97. (See also, A. J. Jaffe and C. D. Stewart, *Manpower Resources and Utilization* [New York, 1951], pp. 78–85, 477–84.)

compares each of the three "demand" variants with the "full-employment supply" estimates shown in Table III.

In the present model, the interrelationship between supply (S), demand (D) and the employment ratio (E_R) may be defined as follows:

When

$$S \equiv D, \quad E_R \equiv .975 \qquad \text{(IV:IA)}$$

$$S < D, \quad E_R > .975 \qquad \text{(IV:IB)}$$

$$S > D, \quad E_R < .975 \qquad \text{(IV:IC)}$$

To determine the "actual" level of unemployment associated with each of the three demand variants we must convert the excesses and deficits shown in Table XVIII to an employment equivalent. That is to say, we must "cost out" the employment equivalent of one billion dollars of demand. Once we have determined the average annual output per worker (Z_A), one billion dollars worth of employment (E_B) becomes,

$$E_B = \frac{\text{1 Billion Dollars}}{Z_A} \qquad \text{IV:II}$$

The average annual output per worker, for agricultural and non-agricultural workers, was shown in Table II; Table XIX shows the average annual output per *average* (weighted average of agricultural and nonagricultural workers) worker and the associated value of E_B for the 1955–1960 period.

TABLE XIX.—AVERAGE ANNUAL OUTPUT PER WORKER AND EMPLOYMENT 1955–1960

	Average Annual Output per Worker(Z_A) (1951 dollars)	Employment per Billion Dollars of Demand (E_B) (thousands of workers)
1955	5872	170.3
1956	5992	166.9
1957	6106	163.8
1958	6236	160.4
1959	6352	157.4
1960	6499	153.9

Once we have established values for E_B we may convert the dollar estimates, Table XVIII, into "employment equivalents." Table XX shows the "employment equivalents" of the excess or deficit demand of Table XVIII. Table XX also shows the total unemployment (by combining the employment equivalents of the excess or deficit demand with the minimum frictional unemployment assumed in the construction of

TABLE XX.—THE EFFECT OF EXCESS (+) OR DEFICIT (−) DEMAND ON EMPLOYMENT 1955–1956

	1955	1956	1957	1958	1959	1960
Employment Equivalents of Excess or Deficit Demand Shown in Table XVIII						
Variant I Demand (million workers)	+2.1	+1.8	+ .7	+ .2	− .3	− .9
Variant II Demand (million workers)	− .3	−1.2	−2.5	−3.4	−4.3	−5.3
Variant III Demand (million workers)	−2.8	−4.2	−5.7	−7.0	−8.3	−9.6
Minimum Frictional Unemployment[a] (million workers)	1.6	1.7	1.7	1.7	1.8	1.8
Unemployment						
Variant I Demand (million workers)	—[b]	—[b]	1.0	1.5	2.1	2.7
Variant II Demand (million workers)	1.9	2.9	4.2	5.1	6.1	7.1
Variant III Demand (million workers)	4.4	5.9	7.4	8.7	10.1	11.4
Unemployment as Percentage of Total Civilian Labor Force						
Variant I Demand (per cent)	− .8	− .1	1.5	2.2	3.0	3.8
Variant II Demand (per cent)	2.9	4.3	6.1	7.3	8.6	9.9
Variant III Demand (per cent)	6.7	8.7	10.8	12.5	14.2	15.9

[a] From Table I.
[b] Under the Variant I Demand assumption employment falls below the frictional unemployment minimum.

Table I) associated with each demand variant. Unemployment as a percentage of the total civilian labor force is also shown with respect to each demand variant.

It will be noted that under the Variant I demand assumptions unemployment fell below the assumed frictional minimum from 1955 through 1958, *i.e.*, demand exceeded supply. Under the Variant III demand assumptions unemployment is projected at a maximum, reaching a peak of 11.4 millions in 1960.

If we are to have "full employment" through the 1955–1960 period we must adjust "supply" to a level where "supply" is just equal to demand. Supply (S) may be expressed as a function of three factors, productivity (P) in terms of constant dollar output per worker per man-hour labor input, the number of workers (E), and the average weekly hours worked (H).

$$S = (E)(P)[(H)(52)] \qquad \text{IV:III}$$

The level of employment (E) is stipulated, *i.e.*, 97.5 per cent of the total labor force; we have assumed productivity (P) as a semi-independent function of time; any adjustments in the levels of supply, therefore, must be made by adjusting the length of the work week. When "demand" exceeds "supply" the work week must be lengthened, when "supply" exceeds "demand" it must be shortened.

To determine how much the work week must be changed we must

"cost out" the dollar value of "one hour's worth of employment." "One hour's worth of employment" may be defined by the equation

$$H_E = (P)(E) \qquad \text{IV:IV}$$

where

H_E = the dollar value of "one hour's worth of employment"
P = productivity, constant dollar output per worker per man hour labor input
E = the number of workers employed.

Table XXI shows the value of "one hour's worth of employment" from 1955 through 1960; this was determined by merely substituting the pertinent data from Tables I and XII into equation IV:IV. "One hour's worth of employment" is then converted into the hours required to produce "one billion dollars worth of supply." To determine the changes in working hours required to adjust "supply" to a level where the latter is just equal to "demand," we merely multiply the excesses and deficits shown in Table XVIII by the hours required to produce "one billion dollars worth of supply."

TABLE XXI.—WORKING HOURS REQUIRED TO MAINTAIN "FULL EMPLOYMENT"

	1955	1956	1957	1958	1959	1960
"One Hour's Worth of Employment" (millions of 1951 dollars)	182.5	191.5	199.4	207.8	217.0	226.1
Hours Required to Produce "One Billion Dollars Worth of Supply"	5.48	5.22	5.01	4.81	4.61	4.42
Changes in Average Anual Working Hours Required to Maintain "Full Employment"						
Variant I Demand	+67.4	+ 55.9	+ 21.5	+ 4.8	− 7.4	− 26.1
Variant II Demand	−11.0	− 37.1	− 76.6	−102.9	−126.3	−153.8
Variant III Demand	−90.4	−130.0	−173.8	−208.8	−242.0	−276.7
Changes in Average Weekly Working Hours Required to Maintain "Full Employment"						
Variant I Demand	+1.3	+1.1	+ .4	+ .1	− .1	− .5
Variant II Demand	− .2	− .7	−1.5	−2.0	−2.4	−3.0
Variant III Demand	−1.7	−2.5	−3.3	−4.0	−4.6	−5.3
Average Weekly Working Hours Required to Maintain "Full Employment"						
Initial Supply	39.9	39.6	39.4	39.2	38.9	38.7
Variant I Demand	41.2	40.7	39.8	39.3	38.8	38.2
Variant II Demand	39.7	38.9	38.3	37.3	36.4	35.2
Variant III Demand	38.2	37.1	36.1	35.2	34.3	33.4

From an analysis of Tables XVIII through XXI the possibility of maintaining "full employment" through the 1955–1960 period seems reasonable. Under the Variant I and II demand assumptions only a minor adjustment in the length of the average work week would be required to equate "supply" with "demand." The last four lines of Table XXI compare the average work week implicit in our initial supply projections with the average work week required to maintain "supply-demand equilibrium" under each of the three demand assumptions.

Under the Variant I and II demand assumptions the weekly hours are fairly reasonable, the maximum adjustment required being only three hours (Variant II, 1960). This adjustment may be accomplished in two ways: the average work week could be adjusted as shown, or the average length of vacations could be increased. For example, if the labor force works an average work week of 38.7 hours and a 35.2 work week is required to maintain "supply-demand equilibrium," the average worker is required not to work (be on vacation) 4.7 weeks a year.[13] Or some shortening of the average work week could be combined with a somewhat shorter vacation. For example, with an average work week of 36.7 hours the vacation would need to be 2.1 weeks; with an average work week of 36.2 hours the vacation would need to be 1.4 weeks. Such adjustments seem not at all unreasonable. However, under the Variant III demand assumptions it would be difficult, if not impossible, to balance supply with demand without drastically reducing the work week (or unreasonably increasing the length of the vacation period).

Thus far we have assumed a rather high goal (97.5 per cent) in defining "full employment." If we were willing to accept a lower employment rate, or its complement, a higher unemployment rate, "full employment" might be attained with a lower level of demand than that specified in the tables above. Table XXII shows the "demand deficits" acceptable if we define "full employment" with a lower employment rate.

If we define "full employment" at a 95.0 per cent level rather than the 97.5 per cent level assumed above we may attain "full employment" with a level of demand from 9.7 to 11.7 billion dollars below that required at the 97.5 per cent level. A 94.0 per cent "full employment" assumption would allow a deficit (below the 97.5 per cent, demand requirements) of from 13.6 to 16.3 billion dollars.

[13] A 35.2 hour work week adds up to 1830.4 hours a year (without vacation), while at 38.7 hour work week adds up to 2012.4 hours. The difference, 182 hours, is 4.7 weeks (for a 38.7 hour week). It is obvious that the three hour adjustment may not be accomplished by merely lengthening the vacation period.

TABLE XXII.—DEMAND DEFICITS IMPLICIT IN SELECTED EMPLOYMENT RATES, 1955–1960

Employment Rate (per cent)	Demand Deficit (billions of 1951 dollars)					
	1955	1956	1957	1958	1959	1960
97.5	0.0	0.0	0.0	0.0	0.0	0.0
97.0	1.9	2.0	2.1	2.2	2.3	2.3
96.5	3.9	4.0	4.2	4.3	4.5	4.7
96.0	5.8	6.1	6.3	6.5	6.8	7.0
95.5	7.8	8.1	8.4	8.7	9.0	9.3
95.0	9.7	10.1	10.5	10.9	11.3	11.7
94.5	11.6	12.1	12.6	13.0	13.5	14.0
94.0	13.6	14.2	14.7	15.2	15.8	16.3

From the above analysis the following conclusions are evident:

1. The maintenance of a high level of employment (in the neighborhood of 97.5 per cent of the total labor force) through the 1955–1960 period would require a continuation of the relatively high growth rates (in demand) of the last decade.

2. A future high level of employment is possible within the present framework of the economy (Variant I and II demand estimates).

3. A high level of employment appears possible without a high level of federal government spending.

4. Four strategic areas of demand, nonresidential construction, producers' durable equipment, consumer supernumerary durables, and state and local government public works will have to be maintained at high levels almost without historical precedent.

5. The over-all economic adjustments required to attain "full employment" appear reasonable.

On the whole, if economic stability is maintained, and the long-term growth rates in the standard of living, productivity, and capital formation continue, we may reasonably expect the last half of the 1950–1960 decade to be a period of "full employment."

COMMUNICATIONS

Additional American Reprints of Economic Writings 1776-1848

To three correspondents I am indebted for eleven titles, additional to those published in the *American Economic Review* for December, 1952. Two of them are earlier than 1776. Professor Fetter of Northwestern University has called my attention to a printing of the *Bullion Report* (1810) in the *Financial Register of the United States* in the issues of July 5 and 19, 1837 and to its issue between "hard covers" in 1874. To this evidence of interest in banking, the lack of which I found so puzzling, may be added Cobbett's *Paper against Gold* contributed, with most of the other titles, by Mr. Salkolski of *The Commercial and Financial Chronicle*. It may not be fanciful to assume that a date as late as 1874 for the printing of the *Bullion Report* shows a professional concern in the development of theory; just as continuing reissues of Say's *Treatise* and Marcet's *Conversations*, a number of which Professor Jennings of Wheaton College has noted in Hollander's catalogue, give evidence of the growth of economics as a teaching subject. I have arranged the titles chronologically and append them. My correspondents are responsible for all except the original dates of publication.

May I take this opportunity to point out the error of note** in my original article (p. 880). Jefferson did not translate but extensively revised Destutt de Tracy's work on political economy (*ibid.*, p. 877).

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	Original Publication	*American Printing*
ROUSSEAU, J. J., *Économie politique* in Diderot's *Encyclopédie*, Vol. V	1755	*Political economy to which is added a treatise on the social contract.* Albany, 1797
FERGUSON, A., *An essay on the history of civil society*	1767	Boston, 1810
BENTHAM, J. A., *Defence of usury*	1787	Philadelphia, 1796 (This precedes the two entries, both of 1837, included in my earlier article, p. 879
TALLEYRAND, C. M. DE, *Memoir concerning the commercial relations of the United States with England*	1806	Boston, 1809
COBBETT, WM., *Paper against gold*	1810	New York, 1846
JACOB, WM., *An historical inquiry into the production and consumption of the precious metals*	1831	Philadelphia, 1832
CHALMERS, T., *On Political Economy*	1832	New York, 1832

SCROPE, G. POULETT, *Principles of political economy*	1833	*Political economy* (adapted by POTTER, A.). New York, 1840
ATKINSON, WM., *Principles of political economy*	1840	New York, 1843
KNIGHT, C., *Store of knowledge.* This contains PLATT, J. C., *History of the British Corn Laws.*	1841	Hunt's Library of Commerce, 1845. Contains Platt's history and other English works.
Memoirs and correspondence of Francis Horner, M.P., published by his brother.	1843	Boston, 1853

Welfare Comparisons and Changes in Tastes

It has frequently been noted that the "new welfare economics" operates on the working assumption that tastes do not change, or alternatively, that if they change, welfare comparisons are meaningless. This assumption has of course been given explicit attention in index number theory and in welfare theory proper, but it has not until quite lately received much emphasis in the recent upsurge of interest in welfare economics associated with such names as Arrow, Little, Samuelson, Baumol and Scitovsky.

The recent review by I.M.D. Little of Arrow's *Social Choice and Individual Values*[1] brings the assumption into relief by relating it to Arrow's pioneer work. And more recently, Sidney Schoeffler in an interesting paper,[2] whose point of departure is also Arrow's book, examines the whole question of changes in tastes and the ability to make welfare judgments. In addition, he advances two methods by which welfare judgments might be made in a setting in which individual tastes change, and frequently.

My major purpose is to offer a modification of one of Schoeffler's suggested comparison methods in a way which I think might justifiably increase the frequency of unambiguous responses rendered by it.

The framework within which Schoeffler advances his suggestions may be briefly sketched. Consider an individual at two periods of time. At t_0 the social state (the matrix showing the distribution of all goods and services, the political situation, the social welfare function, etc.) is A, at t_1 it is B. If the individual's tastes are unchanged, he can say with consistency both at t_0 and t_1 whether he prefers A to B, B to A, or is indifferent between them. He therefore can say at t_1 whether or not he is better off than at t_0; and his answer will be the same as when he is asked at t_0 where he would be better off (*i.e.*, if B were expected to exist at t_1).

Similarly, every other individual in the community can be conceived of as capable of making the same comparison. On the basis of these individual comparisons, it is possible to conceive of a social comparison which "reflects" these individual comparisons.[3] On the basis of the rule for deriving the social

[1] *Jour. Pol. Econ.*, Oct. 1952, LX, 422-32.

[2] "Note on Modern Welfare Economics," *Am. Econ. Rev.*, Dec. 1952, XLII, 880-87.

[3] Neglecting Arrow's "Possibility Theorem" which states that if the social comparisons are asked to fulfill certain apparently reasonable conditions of correspondence with the individual comparisons, then no method of arriving at such social comparisons exists.

from the individual comparisons, we can say that society at t_1 is better off than, worse off than, or as well off as, at t_0.

But this last comparison and all the comparisons on which it is based depend on the tastes of the various individuals being unchanged at the two moments in time. If tastes change, then some individual might well say at t_1 that he prefers B to A while at t_0 say that he prefers A to B. Which statement is correct? The economist claims to be unable to find out. He characterizes the comparisons as meaningless—thus, Schoeffler says, "It is meaningless . . . for the reader to ask himself whether he is more or less happy now than he was at four years old."[4] And the social comparisons based on the individual comparisons he similarly characterizes as meaningless.

We may summarize the above using the terminology of social welfare functions: Expressing tastes solely in terms of individual orderings[5] of the alternative social states, the social welfare function is a rule by which we derive a social ordering corresponding to each set of individual orderings. The social ordering is a function of the several individual orderings. Given a particular set of individual orderings, we obtain a particular social ordering; and so long as this particular set of individual orderings remains unchanged, we can compare the welfare of any individual or of the group itself under various actual alternative social states. If any of the individual orderings change, we will have a new set of orderings and can obtain a new social ordering, whereby, so long as the new orderings remain unchanged, we may from this single new vantage point make actual welfare comparisons between alternative social states. But when these orderings change, comparison of the affected individuals' or of the group's welfare under a social state when one set of orderings prevailed, with the social state when another set of orderings prevailed, is meaningless. Under the circumstances envisaged by Schoeffler, moreover, any change in the environment changes with it some individual orderings. A given set of orderings will prevail for one social state only, and when this state changes to the one with which it is to be compared, the set of individual orderings will also have changed. So it seems that we are left with no consistent criterion for making *any* actual comparisons.[6]

Schoeffler suggests that, even under the transitoriness of individual orderings, unambiguous welfare conclusions can sometimes be drawn by a slight modification in the definition of welfare change. His proposed treatment resembles Scitovsky's famous double criterion for judging changes in social welfare under alterations affecting income distribution. An individual is to compare social states A and B. Consider his comparison on the basis of the ordering which prevailed under both of the social states. Thus, for example, if he preferred A when A existed in fact and also after the change to B, then

[4] Schoeffler, *op. cit.*, p. 883.

[5] More complicated functions typically imply cardinal properties of utility.

[6] Anticipatory comparisons are of course possible, whereby *hypothetically* different social states are compared with the prevailing state; but these comparisons are without practical importance for our present purposes, since an alternative state conceived of cannot come into existence without changing some individual's ordering and making his original judgment inconsistent.

the change to B decreased his welfare. Similarly, if he preferred B both before and after the change to B, then he benefited from the change. If he preferred A before the change and B after, then Schoeffler defines the change as "welfare-neutral." If he preferred B before the change and A after, then Schoeffler defines the change as "welfare-abortive." These last two concepts essentially mean that only ambiguous conclusions can be drawn.

The crucial aspect of this method seems to me to be that prechange and postchange orderings are symmetrically weighted in deriving welfare conclusions. This is very likely an unobjectionable device for posing the general case; but I would suggest that there is an important subset of all cases where individual orderings change for which a lack of symmetry might be appropriate, and might, indeed, enable unambiguous welfare conclusions to be given more frequently than with symmetry.

One of the most important reasons for individual orderings to change is the accumulation of experience with old and new commodities which the consumer gains. Experimentation with familiar goods and services ordinarily enables the consumer better to evaluate how they satisfy him—enables him *more accurately* to order them *in accordance with unchanged underlying propensities*. Similarly, experience with new commodities does not ordinarily signify changes in the personality make-up of the consumer; but it does give him an opportunity not previously possessed to establish a consumption pattern closer to his essentially unchanged criterion of what is desirable. Schoeffler implicitly recognizes this phenomenon when he points out that "a person's attitude toward goods is determined in large measure by the assortment of goods which is *at present* in the visual field of the individual."[7] Attitudes toward goods are determined largely by one's experience of them—all other aspects of the personality unchanged.[8]

So, in the light of experience with various commodities, a consumer's orderings of social states will change. But because these changes are the results of learning, they are irreversible. Consider the model formulated by Schoeffler. Any action (or policy) which changes the social state will in general bring about also a change in some individual orderings. We desire to draw welfare conclusions about the change from state A to state B. Under State A, the individual's ranking is R_i^j, by which he prefers B to A; under B, it is R_i^k by which he prefers A to B. Schoeffler, treating R_i^j & R_i^k symmetrically, draws the conclusion that the change is "welfare-abortive" (an ambiguous conclusion). Can we *meaningfully* lessen the ambiguity? I suggest so.

If the change from R_i^j to R_i^k represents the clarification, the learning from experience about different types and combinations of commodities, then: (1) a change back from state B to state A would not result in a similar change from R_i^k to R_i^j; (2) A would have been preferred by the i'th individual over B both after and before the change if he had known more about B before the change; and this is testified to by our expectation that in the event of a

[7] P. 882. Italics mine.

[8] Georgescu-Roegen devotes substantially the whole of his admirable article, "The Theory of Choice and the Constancy of Economic Laws," to the implications of this factor for demand theory. *Quart. Jour. Econ.*, Feb. 1950, LXIV, 125-38.

change back to B, he would probably still prefer A, thereby enabling us to render in that event an unambiguous welfare conclusion that welfare is greater at A than at B.

Can we not, with this illustration in mind, feel justified in dropping the double ordering perspective when changes in orderings reflect trial and error approximations to an unchanged underlying predispositional scale? Our procedure, where justifiable, would be simply to evaluate the given change in terms of what Schoeffler calls the *ex post* ordering alone (R_i^k in our illustration), and would thereby enable us to draw unambiguous welfare conclusions.

Two related problems present themselves. First, how can one empirically tell when a particular change in some individual's orderings fulfills the characteristics described here? To be sure, no ordering change is due solely to clarification. All education changes the individual in some way. But modern psychology promises an ability in the not too distant future to limn empirically the major orientation patterns of an individual, and consequently to enable us to trace significant changes in these patterns. Certainly, it can not be expected that even in this near future we shall be able to separate out different kinds of changes in orderings with more than rough proximateness. But this may well provide a tolerable margin in actual empirical applications. It cannot be honestly contended that there is a much greater degree of correspondence between our present demand theory and the real world.

For our immediate purposes, however, there is the psychologists' suggestion that basic personality patterns do exist, and that they remain relatively stable through substantial portions of a person's adult lifetime. If we can accept for economic analysis the notion that the changes in orderings meriting multiple perspective weights are only those changes which reflect significant personality reorientations, then we can realistically assume "tastes" (as these basic orientations) to be constant for a much wider range of economic problems than has heretofore been possible.

The second issue raised is allied to the first, and is very serious. Why *should* economists identify tastes only as these basic orientations? Granted, where actually erroneous expectations account for some orderings, changes which reflect only a correction of such errors (let us call them "correctional changes") may appropriately be treated as approximations toward equilibrium within a stochastic conception of consumer behavior. There are, however, other changes in orderings which neither substantially represent trial and error revisions ("correctional changes") nor changes in basic personality orientations ("personality changes"). These represent moderately different ways of looking at various—even familiar—commodities; and they would seem to be exactly what economists have always referred to by the concept of "changes in tastes." Economists *have* not, in the past, restricted the concept solely to "personality changes." What justification is there now for such a restriction? If there is no justification, and one attempts actually to apply the schema presented here, then is it possible empirically to differentiate between corrective changes, which we would not want to consider changes in tastes, and those intermediate changes, which we would want to consider changes in

tastes? Finally, if we cannot in fact make this distinction but would nevertheless like to use the schema analytically, then wouldn't this practically involve dispensing with the concept of consumer equilibrium, since "equilibrating" changes could be considered as continuing indefinitely without any apparent tendency to converge?

I cannot give definitive answers to these questions. But I should like to suggest what kind of answer seems appropriate at this time.

1. There is justification for restricting the concept "changes in tastes" to "personality changes" (and thus, identifying "tastes" with basic personality orientation). This justification consists in the desirability of subsuming much of the intermediate class of ordering changes under the "corrective" category. We speak of changes in tastes as representing analytic discontinuities because they supposedly represent evaluative discontinuities for the individuals concerned. But the consumer typically does not feel such discontinuities when only minor ordering changes occur. He acts with most of them as though he had "learned better." This strongly resembles the characteristic of corrective changes. Evaluative discontinuity takes place when there is a significant change in perspective—when the consumer has experienced the change in basic personality orientation to which I have referred above as "personality change." In a real sense, then, all nonpersonality changes can usually be lumped together and simply treated as partaking more or less the character of equilibrating adjustments in the light of experience. For concrete applications, where it may be desirable to exclude ordering changes which partake "too little" of the character of "corrections," an arbitrary cut-off point can be established to suit the nature of the particular problem in hand.

2. If the procedure under (1) should prove unacceptable, and it be desirable that "intermediate" changes be included as changes in tastes, then the cut-off point mentioned above, where the change partakes "too little" of the character of correction (interpreted now more narrowly than above), assumes great analytic importance. Since the degree of "littleness" here is probably a continuum, the cut-off point will be arbitrary. But within this limitation, it seems reasonable to expect that at least a rough classification is possible by observation of consumer behavior. Interviewing studies, for example, would seem an appropriate tool for throwing light on this, since how the consumer describes his ordering change is evidence as to what kind of change it is. Reversibility or irreversibility of the ordering changes might be suggested as a useful index for classifying. Whatever the empirical means used, however, no substantial difficulties in principle suggest themselves why it should not be possible to come observationally close to any specified domain of the concept of correctional change—so long as that very domain can be operationally defined. The burden, indeed, would seem to be on the critic to say exactly what he means by the "intermediate" category.

3. Assuming that we do lump correctional with "intermediate" ordering changes, whether deliberately (as #1 argues), or inadvertently (as might occur if the argument of #2 were groundless), what becomes of the concept of equilibrium? A number of economists even now are convinced that applica-

tion of consumer demand theory to real world statistical observations requires interpreting the theory stochastically. A stochastic model postulates randomly distributed deviations from equilibrium over time, to reflect the trial and error behavior of consumers in seeking equilibrium. Thus, on this view, already current, the equilibrating process is not thought of as one of instantaneous adjustment but rather as one requiring perhaps considerable duration. It is by no means self-evident that by including "intermediate" changes as part of the random component we should be appreciably increasing the duration of the adjustment path, and thereby watering down the equilibrium concept.

It might be argued, in fact, that the proposed treatment of ordering changes strengthens rather than weakens the equilibrium concept. When "intermediate" changes are treated as changes in tastes, their supposed frequency means that before a consumer ever reaches one equilibrium he is imposing on himself the need to begin adjusting to a new one. Without the "feedback" of successfully realized equilibria to serve as incentive and guide for the consumer, the very meaning of adjustment becomes suspect; and in any case, prediction becomes hazardous for the economist in a system where initial conditions change more rapidly than ever full adjustment to old conditions can be attained. If conservation of the equilibrium concept be a legitimate methodological criterion—and of course it may not be—then lumping "intermediate" with purely correctional ordering changes would seem to possess this saving grace in at least as great a measure as existing stochastic theory.

To summarize the argument of this paper, I have in effect advanced a new definition of "tastes," under which it would be appropriate to draw unequivocal welfare conclusions even under those situations defined by Schoeffler as involving "changes in tastes." Some empirical and methodological implications of the new definition were briefly explored. It is hoped that the seemingly important analytic advantages sketched here will warrant deeper examination of this approach by others.

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A Theory of Excise Subsidies: Comment

In the September 1952 issue of the *American Economic Review,* Professor Earl R. Rolph[1] analyzes the effects of excise subsidies on product prices, money costs of production, and private money incomes and expenditures. He reaches the conclusion that in the case of a general subsidy granted to producers of all commodities at a uniform and proportional *ad valorem* rate no portion of the subsidy is shifted to consumers in the form of lower product prices; the entire amount is passed on to owners of resources (including both hired resources and resources attached to firms) in the form of higher incomes. The purpose of this comment is to point out that this conclusion depends upon additional assumptions not explicit in the analysis, and is in no sense

[1] "A Theory of Excise Subsidies," XLII, 515-27.

general. The principal point which the writer wishes to make is that in any model which embraces the whole of an economy, rigorous analysis of the effect of a new subsidy or tax is not possible unless assumptions are made with regard to *both* the expenditure *and* the receipts side of government.

This comment is confined chiefly to that portion of Rolph's analysis in which he considers a system of excise subsidies leveled at a uniform rate on all commodities. In the simple model analyzed, only two commodities, X and Y, are produced, under conditions of pure competition. Resource services are also competitively priced. Resources are fixed in amounts, and the price system is assumed to keep them fully employed. Under these conditions Rolph traces the consequences of subsidizing both commodities at the same *ad valorem* rate. No mention is made of the source of the funds out of which the subsidies are paid. During the analysis, the market demand schedules for the two commodities remain unchanged,[2] presumably indicating that buyers' disposable incomes are not altered by any immediate change in their tax burdens.

Since the subsidy is an addition to the firm's revenue per unit, its initial effect is to increase every firm's marginal revenue while leaving its marginal cost unchanged. Firms in both industries therefore seek to expand output, and increase their demands for resource services. But since output cannot be expanded, restoration of equilibrium requires an upward adjustment in the prices of resource services until "marginal costs rise and exceed market prices by the amount of the subsidy per unit at unchanged outputs." The net result: no change in the allocation of resources, no reduction in product prices; only a bidding-up of the prices of hired resources until "money costs of production are everywhere increased proportionately." Rolph notes that "these conclusions are inconsistent with those theories which hold that equivalent excise taxes are shifted to consumers."

In considering this analysis, several questions must be raised. Where does the government get the money with which to pay the subsidy? From new taxes? Evidently not—at least, initially. If new *indirect* taxes had been imposed, they would have affected the price of X or Y (since there are no other commodities to tax) and would have canceled, either wholly or partially, the effect of the subsidy—and no such offsets are noted in Rolph's analysis. Nor could new *direct* taxes have been imposed, since such a method of financing would reduce disposable incomes, shift market curves downward, and thus cause product prices to fall.[3] If, in an economy in which buyers' outlays for commodities X and Y exhaust their incomes,[4] new direct taxes were imposed equal to the subsidy payments, the market prices of X and Y would have to

[2] Rolph employs the device of considering a subsidy as a supplement to the price received by the seller rather than as a deduction from his cost. From the seller's standpoint, therefore, the subsidy shifts the demand curve. But the prices which buyers are willing to pay for various outputs remain unchanged.

[3] Direct taxes which absorb only loanable funds, leaving consumption funds undiminished, are conceivable, but are out of the question here since, in the model being discussed, "the resources employed to produce the two commodities exhaust the resources available to the economy"—that is, there is no net investment, no unemployment, and therefore, in the absence of deflationary or inflationary price movements, no net saving or dissaving.

[4] As stated in the preceding footnote, saving is zero in the model under consideration.

be reduced by an amount equal to the subsidy rate in order that output remain at the full-employment level. But if new taxes are not imposed, what method of government financing is employed? And since the subsidy has "a positive income effect with respect to all owners of resources," why does not the rise in their incomes cause them to increase their demands for X and Y? Somewhere among Rolph's implicit assumptions must be one that keeps the market demand schedules from changing.

In the absence of additions to tax revenue, the money used to pay the subsidies must come from one or more of the following sources: (1) drawing down of government bank balances, (2) printing new money, (3) credit-expansionary borrowing from the banking system, (4) borrowing from the public. The first three methods increase the purchasing power in the hands of the public, and may be described for our purposes as inflationary monetary expansion. The fourth method introduces new complications into the analysis, since its effects depend upon conditions with regard to such things as liquidity preference, interest rates, the rates of new saving and investment (if any), etc.; but if we restrict ourselves to the simplest case, where saving and investment are initially nil, so that government borrowing from the public must reduce consumption outlays by an equal amount, we can consider borrowing from the public as equivalent to taxation in its effect on demand. We may therefore group the sources of government funds into two categories: (a) withdrawal of consumption funds through taxation or borrowing, and (b) money creation.

Let us assume provisionally that the government subsidies consist of new money pumped into the system. The initial maintenance of demand for X and Y is now explained. But the final equilibrium would not be that of Rolph's analysis. The rise in incomes would shift demand schedules for both X and Y. Moreover, incomes would not reach a new equilibrium at a higher level, but would continue to rise so long as the inflationary method of financing continued. An equilibrium position is attainable only when government revenues (through taxation and/or borrowing from the public) rise sufficiently to offset exactly the rise in government payments due to the new subsidies.

The conclusion is inescapable that Rolph's model operates in the way he describes only when the following assumption is made: that aggregate tax receipts remain unchanged so long as aggregate income remains unchanged, but rise whenever aggregate income rises by an amount just sufficient to keep aggregate disposable income from rising. This assumption could be fulfilled if it were supposed that the taxing authorities made successive increases in tax rates as aggregate income rose. If this clumsy hypothesis is to be avoided, the only possible alternative is to assume that income tax rates are so steep that the tax rate on increments to income is 100 per cent. Only under such conditions would the higher money incomes be prevented from pushing upward the demand curves for X and Y.[5] Under less confiscatory tax rates (*e.g.*, those of

[5] Since saving and investment are nonexistent in the model being discussed, and since indirect taxation is ruled out by the nature of the problem, it is being assumed that all taxes are consumption-reducing taxes. The general argument being presented, however, does not depend on such an assumption. Even if saving and investment were introduced

the United States) income would have to rise several times the amount of the subsidy before the additional tax revenues rose sufficiently to halt the price-income spiral caused by the "deficit financing" character of the subsidy program. It is therefore not generally true that the final income effect is quantitatively equal to the amount paid by the government in the form of subsidies; the final income effect depends on the tax system: on how high the tax rate on incremental income is, and whether or not tax rates are changed.

Let us consider briefly four possible situations, in each of which it will be supposed that all disposable income is spent on X and Y in some fixed proportion (which means that the demand prices of X and Y at full-employment output vary directly with aggregate disposable income), and that government receipts and payments are in balance before the subsidy and new tax are put into effect.

1. Suppose, along with the subsidy, a new direct tax independent of income (for example, a property tax), continually subject to adjustment so that it is at all times just sufficient to defray the entire expense of the new subsidy program.[6] Suppose also that the tax system includes an income tax, so that the government's revenue is some function of aggregate income. Disposable income falls by the amount of the new tax. With their purchasing power reduced, people demand less of X and Y at current prices. The prices of X and Y must fall until the revenues of firms in the two industries have fallen by the amount of the new tax. Since the new tax receipts and subsidy payments are equal, product prices fall by the amount of the subsidy per unit. In this situation there is no income effect; the entire subsidy is shifted to consumers.

To make this point clear, imagine some part of the subsidy shifted to owners of resources, so that the prices of X and Y are higher than under the equilibrium just described. Income tax receipts would then be higher. Disposable incomes would not be sufficiently higher to raise the demand price of each commodity by the full amount by which unit payments to owners of resources were increased. The price could not be maintained at this higher level; it would fall, and continue to fall so long as government receipts exceeded payments. Equilibrium is possible only when the income effect of the subsidy is wholly obliterated.

2. Suppose now the same situation, except that the new tax brings in a constant amount just sufficient to defray the expense of the subsidy *at present product prices*. In this situation, too, the prices of X and Y fall. As they fall, the subsidy payments per unit of X and Y fall, so that total government payments become less than total government receipts. The budget surplus thus created has a further deflationary effect on product prices. In terms of marginal analysis, the subsidy per unit of output is no longer large enough to

into the analysis and a new tax which absorbed only loanable funds were assumed, leaving consumption funds initially unaltered, the "income effect" described by Rolph would cause a rise in consumer demand for X and Y unless the community's marginal propensity to consume were zero. For simplicity's sake I shall continue to assume throughout this comment that saving and investment are nil and that taxes absorb only consumption funds.

[6] A constant tax revenue would not offset the subsidy under all conditions, since *ad valorem* subsidy payments vary with the prices of X and Y.

offset completely the reduction in the prices of X and Y forced by the reduction in disposable incomes, so that marginal revenue becomes less than marginal cost. As a result, firms reduce their demands for resource services; incomes of owners of resources fall; the demand curves for X and Y are shifted downward again; and so on. What brings this deflationary spiral to a halt is the fact that, as income falls, income tax receipts also fall. When they have fallen by an amount equal to the difference between the amount brought in by the new tax and the amount paid out in subsidies, the budget is once more in balance and equilibrium is reached.

3. Suppose another situation: the subsidy is accompanied by a tax, independent of income, sufficient to defray *half* the expense of the subsidy; also, income tax rates are such that half of increments to income are taxed away. In this situation equilibrium is reached when incomes rise sufficiently to raise income tax receipts by an amount sufficient to defray the other half of the expense of the subsidy. Incomes must rise by the full amount of the subsidy. The eventual position of equilibrium is the same as that described by Rolph. But if we regard this final outcome as reached by a succession of steps, and if demand is assumed to be a function of actually received income rather than anticipated income, the initial effect is different. The new tax shifts the demand curves for X and Y, and their prices fall by half the amount of the subsidy per unit. Only after the other half of the subsidy is passed on to owners of resources in the form of higher explicit and implicit prices of resource services does a partially offsetting upward influence on the demand for X and Y come into play, raising their prices and firms' marginal revenues. The higher product prices now raise firms' demands for resource services further, causing incomes to rise further, and so on, until product prices are restored to their original levels.

4. Suppose all taxes are direct taxes independent of income; suppose uniform excise subsidies of the specific type are imposed on X and Y; and suppose a new tax is imposed which brings in receipts exactly equal to the subsidy payments. (Alternatively, we could suppose an *ad valorem* subsidy and a continually adjusted tax, as in [1] above.) Under these conditions the government budget remains in balance regardless of changes in prices or incomes. Numerous equilibrium positions are equally possible: (1) in which incomes are increased by the amount of the subsidies, while product prices remain unchanged, as in Rolph's model; (2) in which product prices are decreased by the full amount of the unit subsidy, while incomes remain unchanged; (3) in which some part of the subsidy is shifted to consumers, the rest to owners of resources. The outcome is determinate only if additional assumptions are made, either (a) specifying consumer behavior when real cash balances change, and specifying whether or not the money supply remains constant, or, if consumer behavior is unaffected by changes in the real value of liquid assets, (b) specifying relative lags in responses to changes, as, for example, in adjustment of income payments received by owners of firms to changes in profits, and in adjustment of prices of resource services to situations in which marginal revenue and marginal cost are unequal. If the new tax reduces the demand for X and Y by the full amount of the tax before the income effect

of the offsetting subsidy has had a chance to negate the effect of the tax, the whole subsidy will be shifted to consumers. But if the initial income effect of the subsidy acts first, the model will conform to Rolph's analysis. If both influences take effect gradually, some portion of the subsidy will be shifted to consumers. If we assume an *ad valorem* subsidy and a constant addition to tax revenue, the outcome is determinate without additional assumptions; equilibrium is reached at those prices for X and Y at which the subsidy brings in an amount equal to the tax rate.

The above comments are equally pertinent to the study of the effects of differential or partial subsidies. If, in Rolph's model in which a subsidy is imposed on X and not on Y, the market price of X is unchanged and "there is no compensating fall in the demand for Y," it must be that no offsetting tax has been imposed (or, at least, taken effect), so that, for the time being, deficit financing bolsters demand and pushes up incomes.

Two broad conclusions seem called for:

1. The effects of an economy-wide tax or subsidy cannot be studied satisfactorily if analysis is restricted to partial equilibrium analysis. The question whether incomes rise or prices fall throughout the economy is a macroeconomic one and its answer depends on the monetary and fiscal measures being employed.

2. In an economy which collects some part of its taxes in the form of income taxes, the effect of a universal excise tax or subsidy depends on the level of aggregate income (and also, in the case of an *ad valorem* tax or subsidy, on the level of product prices) at which government receipts and payments are in balance. Only at the budget-balancing level is equilibrium reached in an economy without saving or investment. An excise subsidy, therefore, increases the price of resource services (and thus raises the incomes of their owners) only if, and to the extent that, the existing level of aggregate income is below the equilibrium level.

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A Theory of Excise Subsidies: Reply

Professor Abbott's criticisms are centered around his question, "Where does the government get the money with which to pay the subsidy?" (par. 4). Failure to deal with the implications of this question is the basis for his charge of my having engaged in implicit theorizing and, ironically, of partial analysis. I dealt briefly with the question in Section IV of the article under discussion but apparently with little success.

The issue raised by Abbott is an old and fundamental methodological one in fiscal theory. Can the effects of a particular public finance act be assigned to that act alone? Abbott wishes to ascribe to a subsidy the consequences of any tax or borrowing device deemed to be occasioned by the subsidy. If he is correct, attempts to formulate a separate theory of the effects of particular taxes or subsidies must be abandoned. The "effect of a subsidy" becomes the effects of at least two fiscal acts: the payment of the sub-

sidy and the levy of some tax or other financing device. Since the possible financing devices accompanying a subsidy are innumerable, one must be content to list mere possibilities—as Abbott does in his cases numbered one through four. His "models" could be multiplied indefinitely. Logically, he might have concluded that a separate theory of taxes or of subsidies has no meaning: there are only effects of various tax-subsidy, loan-subsidy, tax-expenditure, or loan-expenditure measures. The position he adopts is somewhat similar to that taken by De Viti de Marco and Duncan Black. My position is essentially that adopted by Edgeworth, Pigou, and Lerner.

I do not believe it to be self-evident that one should consider where the government gets the money to pay a subsidy in developing a theory of subsidies or how it spends tax proceeds in developing a theory of taxes. In practice, there is no conceivable way of finding out which taxes "pay for" subsidies to farmers or to veterans. Likewise no one can say which tax receipts or bond sales pay for the Air Force. Such questions have no conceivable answers and therefore have no meaning. The investigator who insists upon attempting to answer such questions must therefore be content to elucidate mere possibilities. By contrast, a study of subsidies or of taxes which attempts to reveal the effects of each type of fiscal act separately does permit the development of theories which apply to any possibility.

The procedure adopted in the article in question is soberly orthodox. Each class of fiscal acts is analyzed under *ceteris paribus* conditions; the effects of subsidies are ascribed to subsidies, of taxes to taxes, and of debt operations to debt operations. Contrary to Abbott's views, such a method does not preclude global analysis of government finance; it is by this route that all effects of fiscal actions may be discovered. Let us not make the mistake of supposing that there is something left out of account, such as deficits or surpluses, by this procedure. These have no effects independently of the effects of government expenditures, transfer payments, taxes, or debt operations. Deficits or surpluses are arithmetical computations, not fiscal acts, and are knowable only after the fact. Money creation by government has no causal significance either. The effects discussed under this guise are the joint results of the positive fiscal acts adopted—loans, taxes, subsidies, and expenditures. Abbott's remarks (as well as much textbook comment) appear to need some revision on this point.

Abbott's cases are too detailed to be discussed point by point but certain observations about them may be pertinent. Throughout he treats consumption as a function of income although net investment is assumed to be zero. Since, however, C equals Y under such assumptions, C cannot be a function of Y. The concept of a propensity to consume under such assumptions is inappropriate. Consequently, Abbott's aggregative system is left ambiguous.[1]

[1] Abbott employs a framework of zero net investment which he regards as also implied in my analysis by my assumption of full employment of resources (see his fn. 3). No such implication was intended in the article nor does full employment appear to imply any particular figure, including zero, for net investment. Gross investment means the money value of new real assets produced during the period and, as such, is a classification of output. Net investment is this sum minus the value of existing resources used up. Full

His cases suggest that the possibilities are so numerous and that shifting may occur in so many different ways that any generalized theories are inherently overstatements. Partly the problem may be that subsidies and taxes are viewed as shiftable even in cases where it is already assumed that the information concerning the amounts involved and the identity of those who pay the tax or receive the subsidy are known. Thus Abbott writes: "If the new tax [a flat-sum tax] reduces the demand for X and Y by the full amount of the tax before the income effect of the offsetting subsidy has had a chance to negate the effect of the tax, the whole subsidy will be shifted to consumers" (p. 894). Although specific excise subsidies are being assumed in this case, the argument could equally well be applied to flat-sum subsidies. By the reference to the income-effect of the subsidy (the increase in the incomes of those obtaining government money), the identity of those subsidized is treated as established. The "shifting" indicated occurs because those who are subsidized happen not to increase their expenditures as much as those subject to the flat-sum tax reduce their expenditures. But shifting of either taxes or subsidies cannot occur in this way. Tax and subsidy theory offers an explanation of how such fiscal devices redistribute income between the government and private groups and how they change relative distribution of income among private groups. Thus, for example, it may not be validly argued that a highly progressive income tax is shifted merely because the rich curtail their expenditures and thereby indirectly increase the real income of the poor. Such a proposition already presupposes that it is a known and definite fact that the tax rests upon the rich and as a result of that fact they curtail their expenditures as compared to the alternative of no tax. Accordingly, neither the tax nor the subsidy is shifted to consumers because people choose for some or no reason to spend less money from one period to the next and prices adjust downward from previous levels.

As to Abbott's two conclusions, I agree with the first without, however, agreeing with the apparent intended implication of the first sentence. The partial analysis technique in the commonly accepted meaning of that phrase—one-commodity-at-a-time approach—was definitely not the method used in the article in question.

As to his second conclusion, I see no advantage and many disadvantages in restricting one's analysis of subsidies or taxes to the special case of a balanced budget, if this is the intent of his penultimate sentence. In practice, budgets are not typically balanced. But in any event, Abbott's concluding sentence seems inappropriate. Subsidies paid by the government to private groups do something to them, regardless of whether aggregate income is above or below its "equilibrium level." This "something" is a positive element in the income of those initially subsidized. They may not be able to retain all of the subsidy because the subsidy formula may induce a type of behavior which shifts the

employment of existing resources can and does exist with a substantial rate of net investment. The shifting argument as developed in the original paper can be applied to an economy in which all output consists of new resources (zero consumption). Here and elsewhere I detect in Abbott's thinking an inclination to regard stationary conditions as the proper setting for fiscal analysis—a view which seems to me to be needlessly limiting.

income to other groups. If the subsidy is of the excise type and happens to be general and uniform, this income shifting occurs by increasing the prices of hired resources under full employment conditions and of increasing their incomes via greater employment under less than full employment conditions. If the subsidy is not general, there is in addition a reallocation of resources in favor of those products heavily subsidized relatively to others. These conclusions hold regardless of what other financial devices the government may simultaneously employ, if any, including excise taxes. A system of subsidies may of course be offset by a system of taxes (as noted in Section IV of the article), but before such a statement can make any sense, one must know what effects of what fiscal devices are being offset.

Abbott's remarks, being directed almost entirely to the case of a general and uniform subsidy of all products, may misdirect attention from the main possible applications of the theory. In practice, governments are selective as to what products they subsidize as well as to what products they tax. Theories are needed to provide guidance to investigations of the effects of subsidizing housing, subway service, air transport, postal services, exports, and various food items. I agree wholeheartedly with the tone of Abbott's statements that partial analysis which does no more than glue attention on the particular industry subsidized—a common practice—may gravely distort research in these areas. Industries draw on a common pool of resources and are inherently interrelated. The implications of the extreme case of uniform and general excise subsidies are instructive as to the need for avoiding the error of regarding a subsidy to private enterprise or a loss on government enterprise in isolation, and in particular for avoiding the implication that subsidies necessarily "benefit" the buying public. In a competitive world, shifting of subsidies to consumers is not a real possibility.

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Elasticities, Cross-Elasticities, and Market Relationships: Comment

The value-theory literature of the nineteen-thirties in general, several revealing comments by Kaldor in particular, and especially Triffin's pioneering work in 1940 suggested to economists that it should be possible to classify market relations between sellers by cross-elasticities of demand alone. In an interesting recent article Professor Bishop called attention to certain difficulties which develop in connection with cross-elasticity classifications.[1] He suggested that we should turn to a different classificatory principle, using the ratio of own elasticity to cross-elasticity, as well as the own elasticity (*i.e.*, demand-elasticity with respect to the commodity's own price) separately. The present note expresses views summarized by the following propositions:

1. The difficulties which Bishop discusses do not legitimately arise if we are

[1] Robert L. Bishop, "Elasticities, Cross-Elasticities and Market Relationships," *Am. Econ. Rev.*, Dec., 1952, XLII, 779-803. A very useful bibliography, including references to Kaldor's and Triffin's work, is found in footnotes 1 through 3, p. 779.

concerned with the problem of classifying the ideal market structures of economic theory. Bishop seems to be unaware of this; at any rate he does not explain that his difficulties develop on a different level of analysis. In the subsequent pages I shall describe a simple system, based on cross-elasticities of demand alone, which seems satisfactory for the classification of the ideal structures. In my opinion it is an essential property of our concepts of market relations that they can be so defined.

2. Bishop's difficulties do legitimately arise on a lower level of abstraction the nature of which remains unexplained in his article. These difficulties deserve attention if we are concerned with developing criteria for deciding whether a real market relation does or does not satisfy some ideal relation "reasonably well." This is a different task from that described under (1). To this task my suggested classification of ideal structures is unsuited.

3. However, when concerned with the second task, we may apply a simple adjustment to the basic classification here suggested, without bringing in new concepts other than that of limited sensitivity. The resulting adjusted cross-elasticity classification is suitable to the second task. It is simpler than that suggested by Bishop and it avoids considerable logical difficulties which would be created by the use of Bishop's classificatory principles.

I. *Classification of Ideal Market Structures*

A purely competitive market structure is an ideal structure (model) in which a group of firms is treated as if it were producing a literally homogeneous product, the output of the group is treated as if it were infinitely greater than the individual output of a firm, and measuring rods are supposed to be infinitely fine with the result that reactions to changes in variables are viewed as continuous. The last of these working hypotheses (idealizations) implies that our analysis proceeds as if it were possible to observe the consequences of so-called infinitesimal price changes, that is, the *limit* of the ratio of the effect of a price change to the price change itself, when the magnitude of the price change is made to approach zero. If each firm actually could observe the consequences of infinitesimal price and quantity impacts, then the number of producers would have to be infinite in order to rule out oligopolistic interdependence. Concern with a limiting situation where numbers are treated as infinite and use of the infinite-sensitivity assumption are interrelated. The infinite-sensitivity assumption in turn is required for performing operations along continuous functions.

In its ideal form the concept of monopolistic competition in the large group incorporates the same idealizations, with the significant exception that the idealization pertaining to product-homogeneity is omitted. The members of the group, whose number is treated as infinite, are located not in a point but in a conveniently delimited region of the substitutional universe. The ideal form of pure or undifferentiated oligopoly differs from that of pure competition in that the group-output is treated as finite in relation to the firm-output. Therefore an hypothetical individual demand curve based on given other prices would shift whenever a firm moved along it: The rivals would feel the consequences of such a move and they would change their prices. In the ideal

form of differentiated oligopoly, or monopolistic competition in the small group, only one of the idealizations is retained, namely that concerning the continuity of reactions to infinitely small impacts. Numbers are not treated as infinite and the product is not treated as homogeneous. As long as, for methodological reasons, we postulate sensitivity to infinitesimal impacts, treating numbers as finite means placing a structure in the category of oligopolies. The effect of oligopolistic interdependence on market results may gradually diminish as the number of producers rises, even though their number stays finite; but a theory of *oligopoly* is required for proving this, if sensitivity to infinitesimal impacts is postulated.

No one ever believed that real market structures could be found which would possess the characteristics of the ideal ones, just as no one drawing, for example, a continuous Lorenz curve for an income-distribution, ever believed that the population of, say, a city, was perfectly divisible (*i.e.*, really consisted of an infinite number of the units arrayed along the abscissa). The real existence of a perfectly divisible population is as "unimaginable," as the real existence of an infinite number of firms in a point or in a finite region of the substitutional universe.[2] Sensitivity to infinitely small impacts also is unimaginable. But this in itself is irrelevant. In all sciences benefit can sometimes be derived from analysis in terms of models based on limiting assumptions of this sort. The results of such analysis frequently prove to be simple and good approximations to reality. Economists have of course been much less successful than natural scientists in their attempts to derive empirically significant conclusions from their ideal models. But, while in economics we usually cannot apply the results of pure analysis without making disturbingly large allowances for the imperfections of the real world, it remains a fact that our basic theories were established in terms of idealized models, and that the practical concept of market relations must be connected with ideal concepts, which can serve as a basis for generalized theoretical analysis.

I now turn to my first objective. This is the classification of ideal market structures, that is to say, of models in terms of which fundamental theories were developed rather than of structures "existing" in the real world. The classification can be undertaken with the aid of cross-elasticities of demand alone, and is summarized in Table I. Throughout this note, symmetry of market relations will be assumed. In other words firm-labels may be interchanged.

In the table E_{ij}^{U} stands for the cross-elasticity (logarithmic partial derivative) of the demand for the product of firm i with respect to the price at which firm j is willing to sell, when the price change is a price-increase. The concept will be called upward cross-elasticity. E_{ij}^{D} stands for downward cross-elasticity analogously defined. The initial situation must of course be conceived of as one in which both firms are actually selling.

The following explanatory comments should be added.

1. In pure competition the downward cross-elasticity of demand is infinite because if, *ceteris paribus*, firm j reduces its asking price infinitesimally, then

[2] The analogy should not lead us to overlook the fact that the substitutional universe has many more dimensions than natural space.

no other firm can sell at all. Such an experiment would of course destroy the initial market structure; firm j would displace all other firms, which produce the commodity in question. But this is no objection, since we are interested in identifying market structures not in conserving them. The cross-elasticity of demand expresses the effect on the demand for the product of i of a postulated price-change by j during the time-interval in which j is willing to sell at the changed price. While j is willing to sell cheaper, i can sell nothing at the original price. It is true that we are here concerned with merely *pure* (not necessarily perfect) competition, and that certain frictions are compatible with competition that is pure but not perfect. Perfect mobility is not postulated. But we are still dealing with an analytical idealization which would become undefinable by cross-elasticity, own elasticity, or any other formal criterion if we allowed the same commodity to be sold simultaneously at

TABLE I.—CLASSIFICATION OF MARKET RELATIONS

(Suggested for Definition of Ideal Structures by Consequences of Infinitesimal Price Changes)

Relationship between Firms i and j	Upward Cross-Elasticity E_{ij}^{U}	Downward Cross-Elasticity E_{ij}^{D}
Belong in same pure oligopoly	∞	∞
Belong in same differentiated oligopoly	Finite positive	Finite positive
Belong in same purely competitive group	0	∞
Belong either in same monopolistically competitive large group or not in same "group" of any conventional description. (Answer depends on group-to-firm cross-elasticity criterion, defined on p. 903.)	0	0

different prices. This would mean that a differentiated product could not be formally distinguished from one that is undifferentiated. Even in merely pure competition we have to insist on the inability of a producer to sell at a given price while another producer is willing to sell at a lower one. Hence downward cross-elasticity is infinite.[3]

On the other hand, upward cross-elasticity is zero in pure competition. If firm j raises its asking price infinitesimally, it faces zero-demand, and thus it removes itself from the market, but the sales gains which result from this

[3] If "pure" competition were interpreted as sufficiently imperfect to allow for the simultaneous sale at different prices of the identical commodity, then only perfect competition would be formally definable. The definition of perfect competition with its minimum long-run cost and zero-profit implications requires cost concepts, mobility-immobility concepts and certainty-uncertainty concepts in addition to demand concepts. Normally we conceive of pure competition as possibly imperfect but not so imperfect as to allow for the coexistence of more than one price for a homogeneous commodity. Only on this interpretation does pure competition become formally definable at all and in this case it can be defined by cross-elasticities of demand alone.

for others are distributed among producers whose number is treated as if it were infinite. In any undifferentiated market, atomistic or oligopolistic, the demand for the output of the individual firm i results from a random distribution of the as yet unsatisfied demand for the commodity as a whole at a given price; hence in an ideal undifferentiated *and atomistic* market the removal of j does not change the demand for the output of any individual rival.

2. If both upward and downward cross-elasticity are zero, this means that the two firms belong in the same monopolistically competitive large group, provided that they are viewed as belonging in one and the same group at all. In the monopolistically competitive large group the upward cross-elasticity is zero because the consequences of a reduction in the sales of an individual firm —say, of j—are distributed among firms the number of which is treated as if it were infinite. Among these there may exist a finite number of oligopolists but there must exist an infinite number of firms, such as i, for which the demand-increment is zero. The downward cross-elasticity also is zero because when the degree of price-reduction by j is made to approach zero, the sales-increase of j is a finite multiple of this small price-reduction and hence the reduction of demand for i becomes zero. $E_{ij}^U = E_{ij}^D = 0$ is a necessary condition of the ideal form of large-group monopolistic competition with which Chamberlin seems to be concerned in his as yet unpublished essay on market classification.[4] The ideal form implies an infinite number of producers and hence zero cross-elasticities. In *The Theory of Monopolistic Competition* Chamberlin says that for some purposes it is legitimate to treat the number of producers in atomistic structures as infinite but his detailed analysis there relates to the "real" (practical) structures to which we shall turn in Section II.

$E_{ij}^U = E_{ij}^D = 0$ is a necessary but not a sufficient condition of the ideal form of large-group monopolistic competition. This condition is satisfied also between two firms which are viewed as not belonging in the same group. An

[4] Bishop, who gives an account of this essay (conference paper) accuses Chamberlin of "odd perversity" for maintaining that while cross-elasticity may be infinite in the undifferentiated large group, it falls to zero with the least differentiation. But Chamberlin is quite right. The difference between homogeneity and the least differentiation is that in the event of homogeneity the price-reducing firm increases its sales in infinite proportion of the firm-output (and indeed displaces all other firms) regardless of how small the price-reduction becomes, while in the event of the least differentiation the sales-increment of the price-reducing firm can be made smaller than *any* finite magnitude provided that the price reduction becomes small enough. The proposition implies of course continuous demand curves.

This is not to deny the logical possibility of starting with, say, two differentiated producers and of increasing the number of firms in such a way that the cross-elasticities of demand should stay unchanged or should rise. But it is surely possible to increase the number of firms in such a way that the cross-elasticities should be falling with the result that the process tends toward a situation where the own elasticity stays finite and the sales-loss or gain of a firm in the event of unilateral price changes becomes distributed among an ever increasing number of other firms. In these circumstances, the fall in the cross-elasticity reflects the circumstance that, as the variety of products increases, a decreasing proportion of the customers of each firm can be tempted easily to shift to and from any one (increasingly specialized) rival. The own elasticity need not fall and it may conceivably rise, because it measures the joint temptation to shift to and from a great many rival specialities. This is how we arrive at the monopolistically competitive large group.

isolated monopoly satisfies this condition with all other firms.[5] The two firms belong in the identical monopolistically competitive large group only if, in addition to $E_{ij}^U = E_{ij}^D = 0$, another condition also is satisfied. A convenient way of expressing the further condition is to require that each of two group-to-firm cross-elasticities should exceed a critical value. The two group-to-firm cross-elasticities measure the demand-effect on i and on j, respectively, of a price change undertaken by all members of a group of firms[6] satisfying the following indivisibility requirement: the group must not be divisible into two subsets in such a way that one subset alone would show the required cross-elasticity in relation to i but not to j, and the other alone would show the required cross-elasticity in relation to j but not to i.[7]

A decision of analytical convenience must be made concerning the required or critical value of the group-to-firm cross elasticities. Problems of monopolistic competition are encountered as soon as each of the two group-to-firm cross-elasticities just described exceeds zero. For some purposes it is therefore possible to select zero as the critical value which must be exceeded. But frequently we wish to direct our analysis to an ideal group for which the value of the cross-elasticities in question is reasonably high, *i.e.*, to a fairly "close" group. This is because frequently we wish to construct the ideal equivalent of a real group which shows monopolistically competitive behavior in a significant measure, not just weakly.

3. The remaining definitional propositions of Table I seem self-explanatory.[8] The reader will notice that in this system a firm may very well be viewed as belonging in one group with some firm or firms, and in another group with others. We should add that extension of the classificatory system to symmetrical buyer-buyer relations,[9] and to asymmetrical relations, either between sellers or between buyers, would cause no difficulty. Nor would the extension of the system to complementary relations raise fundamentally different

[5] The ideal form of isolated monopoly may be defined as a firm i which satisfies the symmetrical zero-cross-elasticity condition with *all* other individual firms in the economy and can be paired with no other firm in such a way that both would satisfy the condition of sufficient group-to-firm cross-elasticity which will presently be described.

[6] In the ideal world this group must be treated as consisting of an infinite number of firms.

[7] This indivisibility requirement excludes establishing high group-to-firm cross-elasticities by lumping together all moving picture theatres and all stationery stores into one aggregate and by setting a group so constituted against a pair of firms consisting of a stationery store and a theatre. Such a group would satisfy the indivisibility requirement only for a very low group-to-firm cross-elasticity, corresponding to the relationship between the group of stationery stores and a moving picture theatre or the group of theatres and a stationery store.

[8] In differentiated oligopoly both the upward and the downward cross-elasticities are finite. As the price change by j approaches zero, the demand-effect on i continues to bear a finite proportion to the price-change. In pure oligopoly the downward cross-elasticity is infinite for the same reason as that which produces infinite downward cross-elasticity in pure competition; and the upward cross-elasticity is infinite because an infinitesimal price-increase by j removes j from the market and hence it increases the demand for the output of each rival in a finite proportion.

[9] With the aid of cross-elasticities of supply.

problems.[10] However, the system here presented can be employed only as a point of departure for the analysis of essential questions, such as those relating to the emergence and the survival of market structures and the behavior of firms under alternative market conditions. The analysis of these questions requires cost-concepts, mobility-rigidity concepts and certainty-uncertainty concepts as well as demand concepts. Furthermore, analysis that covers the whole network of economic activity requires the use of group-to-group as well as firm-to-firm and group-to-firm cross-elasticities.[11]

II. *Criteria of the "Practical Belonging" of Real Market Relations in Various Categories*

On the level of abstraction on which the analysis of Section I was conducted, the classification of Table I is satisfactory and hence Bishop's misgivings concerning cross-elasticity classification seem unjustified. We must interpret Bishop as being concerned with problems arising on a lower level of abstraction where he legitimately encounters the difficulties which he discusses. What imperfections of the real world do we have to take into account to arrive at this level of abstraction?

In the real world measuring rods are crude and successive reactions are forthcoming merely to finite changes in variables when these changes exceed certain threshold values. The limited sensitivity of measuring rods is the reason why a group may be *practically* nonoligopolistic even though the number of firms in it is finite.[12] A group is *practically* nonoligopolistic ("large") if the individual firm is an unnoticeable unit to its rivals; and the product is *practically* homogeneous if certain individual price-changes would completely eliminate the demand for the product of existing firms. In the practical universe we must "test" for these market characteristics by the consequences of *ad hoc* selected finite price-changes.

[10] Complementarity will express itself in negative cross-elaticties. Here it is not desirable to eliminate income effects because the nature of market relations is influenced by them.

[11] The system developed in my *Competition Among the Few* (New York, 1949), pp. 50-54, is much more complete in all these respects. The principles underlying my earlier classification are identical with these here employed but the earlier classification would be unnecessarily complex for the present purpose.

[12] If an oligopoly theory such as that of Cournot were acceptable, then a market structure could be "practically nonoligopolistic" in another sense, even on the assumption of infinite sensitivity. For example, in Cournot's theory, a group of 99 firms would produce 99 per cent of the competitive output, and hence the size of the group-output, and generally the market results, would be practically nonoligopolistic (practically purely competitive) even though the behavior of the group would be fundamentally oliogopolistic. But of course we do not wish to commit ourselves in advance to any such specific theory of oligopoly. Moreover, we want to take account of the fact that when in the real world a large group of producers is said to behave "atomistically," this is so because the limited sensitivity of firms makes them unaware of each other's individual influence, not because fundamentally oligopolistic awareness makes them produce results which in this particular case we may not wish to distinguish from the atomistic-competitive ones. If we find oligopolistic awareness in a real group, we want to place the group practically in the category of oligopolies and then turn to the question of what market results may be expected in the given oligopolistic circumstances.

Can we test in the practical universe with the aid of Table I? If we wanted to use the table for this purpose we would of course have to interpret the cross-elasticities of the table as incremental ratios, with conveniently chosen *finite* proportionate price changes in the denominator and the corresponding proportionate quantity changes in the numerator; and we would have to enter subjectively unnoticed ("negligible") quantities as zeros.

Table I is inadequate for testing by the consequences of finite price changes in the practical universe. The valid content of Bishop's analysis can be translated into our terminology by stating that Table I with finite price changes is not a reliable instrument when it comes to testing a real market. Bishop's illustrations of his problem never strictly observe the rules of the ideal universe, while, at least in most respects, they do conform to the rules of the practical universe which we are now considering. In his analytical operations the number of firms in large groups is always treated as finite, and what he calls a "small" price-reduction (a "shading" of the price) may result in a conceivably "enormous" increase in sales (*op. cit.*, p. 788). These are not infinitesimal price changes.

If Table I were used for testing real market structures with finite price changes, then two difficulties would arise.

A. The first difficulty gives rise to what appears to be Bishop's main problem. Table I tells us that a finite value for downward cross-elasticity is in itself conclusive evidence of an oligopolistic relationship. In large-group monopolistic competition downward cross-elasticity would have to be zero. But if we think in terms of limited sensitivity and of discontinuous reactions to successive finite changes in variables, then this ceases to be true. An hypothetical reduction of the price of firm j by, say, 10 per cent could result in growth of the firm from a subjectively unnoticed size to a size which is clearly noticeable to the individual rival. Downward cross-elasticity could be finite. Yet in such circumstances we would not wish to identify the new existing relationship as oligopolistic, any more than we wish to call a purely competitive structure monopolistic merely because a price-reducing firm could monopolize the market if the others kept their prices constant. Bishop attributes considerable importance to this difficulty. In his illustrations an atomistic differentiated structure may show higher cross-elasticity than an oligopolistic structure, provided that in the atomistic structure the own elasticity of the price-reducing firm is high enough. However, Bishop does not make it clear that this difficulty is a consequence of the finiteness of price changes by which, in a world of limited sensitivity and finite numbers, an initially unnoticed price-reducing firm is "made to change" to a noticeable one. The difficulty would not arise in a world of unlimited sensitivity because there the finiteness of cross-elasticity, as discovered by the test of an infinitesimal price change, would dependably disclose oligopolistic interdependence in a differentiated group. The difficulty would be spurious if in a world of limited sensitivity we were trying to test with infinitesimal price changes and thus were attributing to the system a sensitivity which it does not possess. A legitimate difficulty develops only if in a world of limited sensitivity we are testing with finite price-reductions, and in this case the

difficulty springs from the fact that a finite price-reduction may raise a variable—the sales of a rival—beyond a threshold value. This is how we should interpret Bishop's problem. At the same time Bishop does not make it clear that, taking limited sensitivity and finite price changes for granted, the difficulty can be avoided by using upward rather than downward cross-elasticity for oligopoly tests. If firm j, by reducing its sales or by removing itself from the market, could exert a noticeable influence on a rival, then we do wish to consider this relation oligopolistic. It would of course be very arbitrary to use the numerical value of the upward cross-elasticity, or any other figure, as a unique index of the degree of oligopolistic intensity, but the value of this cross-elasticity does dependably indicate whether, at the time of testing, oligopoly (noticeable individual firm-size) does or does not exist. The conclusion so far is that *a table which can be used for testing real markets should differ from Table I in that it should always require testing for oligopoly by upward cross-elasticity.* For "nonoligopolistic" relations and only for these will the value of this cross-elasticity be zero (*i.e.*, an unnoticeable quantity-change divided by a finite and noticeable[13] price-change).

B. We now turn to the second difficulty in connection with use of Table I for real testing. Bishop does not discuss this second complication, although some passages of his analysis may show awareness of it.

Table I tells us that a finite value for upward cross-elasticity in itself discloses the existence of product-differentiation in oligopoly. This is true only when we assume infinitesimal price changes. With finite price changes, which are necessarily implied in any consistent interpretation of the Bishop problem, a finite value for upward cross-elasticity is inconclusive. The value of this magnitude, interpreted as an incremental ratio rather than a limit, will be finite (a ratio of two finite magnitudes) even if the product is homogeneous, provided that the group is oligopolistic. If firm j raises its price by 10 per cent and this leads to a 20 per cent increase in the sales of firm i, we do not know whether this is because j is a comparatively small oligopolist in an undifferentiated market (who completely removed himself from the market), or a comparatively large oligopolist in a differentiated market (who merely reduced his sales). However, the same difficulty does not develop if we test for product-differentiation by downward instead of upward cross-elasticity. Assume that firm j reduces its price by a conveniently selected critical margin, satisfying all the demand which it faces at that price and that this completely removes firm i from the market. In this case and only in this case are we willing to classify the product as practically homogeneous.[14] If by this cri-

[13] The quantity change for i is unnoticeable; the price-change by j has a noticeable effect on j itself.

[14] An unimportant complication may here be mentioned. Firm j may in the initial position be selling a differentiated product at such a low price, in relation to that of i, that a further small price-reduction completely removes firm i from the market instead of reducing its sales. In this case our criterion wrongly indicates product-homogeneity. Such pricing by i at precisely the upper border of the zone of coexistence, and by j at precisely the lower border, can be disregarded. Circumventing this complication would require making practical homogeneity dependent on the size of initially observable price-differentials. But this has the disadvantage of calling for an arbitrary decision as to what prices are precisely "equal"

terion the product *is* homogeneous, then we may consider the downward cross-elasticity infinite because the sales reduction which i suffers bears an infinite proportion to the zero-sales with which it ends the experiment.[15] The conclusion is that *a table which can be used for testing real markets should differ from Table I in that it should always require testing for product-differentiation by downward cross-elasticity.* For homogeneous products the value of this will be infinite, for differentiated ones finite. This is the adjustment of procedure for which the second difficulty calls.

Our task is to adjust Table I to the practical universe, and thus to avoid having to turn to different principles for the testing of real relations. The essential step in the adjustment is to omit (or make less specific[16]) some of the information contained in Table I and thus to derive Table II.

TABLE II.—CLASSIFICATION OF MARKET RELATIONS BY LESS SPECIFIC DESCRIPTION OF FINDINGS ENTERED IN TABLE I

(Suggested for Testing Real Market Relations by Consequences of Finite Price Changes. Elasticities then Become Incremental Ratios, not Limits in the Sense of Calculus)

Relationship between firms i and j	Upward Cross-Elasticity E_{ij}^U	Downward Cross-Elasticity E_{ij}^D
Belong in same pure oligopoly	Positive	∞
Belong in same differentiated oligopoly	Positive	Not Infinite
Belong in same purely competitive group	0	∞
Belong either in same monopolistically competitive large group or not in same "group" of any conventional description. (Answer depends on group-to-firm cross-elasticity criterion, defined on p. 903.)	0	Not Infinite

If we could test by infinitesimal price changes and could possess the data required for placing a structure in a box of Table I, we would always have to place the structure in the identically described box of Table II, simply by listing our data in less detail (less "sensitively"). An ideal structure possessing the characteristics of a category in Table II would also possess the *additional* characteristics of the same category in Table I. The ideal relations stay defined by the conditions of Table I.

However, if Table II is used for the testing of real markets by *ad hoc* selected finite price changes, then it performs a useful analytical function. The two difficulties which were discussed in the present section are avoided. According to Table II, oligopoly is diagnosed by the noticeability to rivals of

in a differentiated market. Quantity measures which would be common to all species of a genus may not be easily found.

[15] In the event of finite changes it is of course always arbitrary whether a proportionate change is computed in relation to the bigger or the smaller of two quantities. Here it is convenient to compute it in relation to the smaller.

[16] Less specific in the sense in which "positive" is less specific than "positive infinite."

a price *increase* undertaken by an individual firm, that is, by the non-zero value of upward cross-elasticity. Product-homogeneity is diagnosed by the complete removal from the market of all other members of the group, under the influence of a conveniently selected critical price *reduction* by a single firm. It is diagnosed by the infinite value of downward cross-elasticity.[17] In the ideal universe of Table I any combination of atomism-oligopoly with homogeneity-differentiation *could* be diagnosed by this same double test; but in the ideal universe some structures are recognizable in a simpler way by a single test, based either on upward or on downward cross-elasticities.

Table II describes reasonable criteria for the classification of real market relations. Tests of this sort can of course rarely be carried out by statistical analysis but it must be assumed that persons familiar with conditions in an industry are capable of making estimates which are helpful for answering the questions posed by Table II. These questions relate to the order of magnitude of firm-to-firm and group-to-firm cross-elasticities.

Using Table I, with infinitesimal price changes, for the definition of ideal market relations, and Table II, with *ad hoc* selected finite price changes, for the testing of real markets, has the advantages of linking our two universes of discourse by a well-defined procedure. By *practically* belonging in a specific category, according to Table II with finite price changes, the various structures satisfy some but not all conditions of *ideally* belonging in their respective categories. By comparing the two tables it is possible to indicate what imperfections we temporarily neglect if, in the first approximation, we treat "practical belonging" in a category as if it were "ideal belonging," thus gaining the advantages of operating along continuous functions. The decision concerning the magnitude of the price changes for testing must of course be made dependent on analytical objectives. In one instance we may be concerned with what happens in some specific range of changes, in another instance our concern may be with the effects of changes falling in a different range. Accordingly we may wish to place the same structure in different "practical" categories, to obtain a point of departure for the analysis of the consequences of firm and group behavior under given market conditions.

III. *Comparison with Bishop's Suggestions*

Testing by finite price changes, whether a moderately large group of somewhat insensitive producers behaves more-or-less like an ideal group in which the number of producers is treated as infinite, is of course a different task from that of defining a model in which the number *is* treated as infinite. The diffi-

[17] Practical belonging of i and j in large-group monopolistic competition requires not merely that the structure should fall in the last row of Table II but (by analogy to the ideal world of Table I) also that the condition of sufficient group-to-firm cross-elasticities should be satisfied. Here too problems of monopolistic competition develop in principle as soon as the "critical" cross-elasticities are greater than zero but frequently we will want to insist on a higher critical value.

A firm practically belongs in the category of isolated monopoly if with all other firms in the economy it belongs in the last row of Table II, and if it satisfies the condition of sufficient group-to-firm cross-elasticities in conjunction with no other firm.

culties to which Bishop has called attention are real and important, but only if we are concerned with testing market relations by finite price changes under conditions of insensitivity to the very small.

Instead of overcoming the difficulties by some procedure such as that developed in the preceding pages, that is, by allowances for limited sensitivity, Bishop turns to a very different classificatory principle. He defines an elasticity *ratio*, dividing the elasticity of demand with respect to the own price (E_{ii}) by the cross-elasticity of demand (E_{ij}), and he states that this ratio tends to rise with the number of firms in the group.[18] More precisely, in a differentiated structure a high ratio of E_{ii} to E_{ij} means that, from the point of view of firm i, firm j has a small "weight" or relative importance in the universe of all firms.[19] Having thus tested for atomism-oligopoly by what he calls a "numbers-equivalent" (namely by the elasticity ratio), he proceeds to testing for homogeneity-differentiation by the own elasticity taken separately. For example, in Bishop's terminology a sufficiently high elasticity ratio and a sufficiently high own elasticity mark "near-pure competition." Low elasticity ratio and high own elasticity mark "near-pure oligopoly."

It should be added that not only the own elasticity is influenced in a rather complex fashion by product-differentiation but the cross-elasticity and the elasticity ratio also are. The elasticity ratio is not a pure indicator of numbers (corrected for size-distribution), since the relative weight or importance of j for i, in the universe of all firms, depends on relative substitutional distances as well as on numbers and on size-distribution. This is not overlooked by Bishop and it is not in itself a shortcoming of the ratio. Numbers and size-distribution create merely a vague presumption as to the nature of a group. In the real world we cannot avoid facing the question of limited sensitivity and of threshold values. Interest attaches to numbers only because they are more readily ascertainable than elasticities. But Bishop's suggestion that the elasticity ratio be called a "numbers equivalent" may not be fortunate.

The distinctive feature of Bishop's classification is the use of the own elasticity, and particularly the elasticity ratio, in addition to cross-elasticity concepts. Bishop needs the distinction between upward and downward cross-elasticity, as we do, although he disregards this distinction except in a footnote dealing with a side issue.[20] In addition he uses the own elasticity and its ratio to cross-elasticity. This is the characteristic property of his system.

[18] A double-sized firm should be regarded as the equivalent of two unit-sized firms.

[19] The own elasticity expresses the effect on firm i of a price change undertaken by all other firms (because, neglecting the income effect, this is the same thing as the effect on firm i of a price change undertaken only by itself); and the cross-elasticity expresses the effect on firm i of a price change undertaken only by firm j. The elasticity ratio therefore is inversely related to the relative significance of j in the group of all firms, from the point of view of i.

[20] In some of the cases which Bishop discusses in detail the value of the upward cross-elasticity is very different from that of the downward cross-elasticity. If, for example, a small firm in a differentiated market grows to many times its initial size by finitely reducing its price, the downward cross-elasticity must be many times greater than the upward cross-elasticity. For the context in which Bishop mentions the distinction between the consequences of price-increases and of reductions, cf. *op. cit.* p. 793, footnote 24.

Bishop's additional concepts are not needed for classification. Indeed, use of the elasticity ratio destroys something that is carefully preserved in the simpler classification presented in this paper. For, in the classification here suggested, homogeneous competition and oligopoly remain definable in the same framework that also serves for the definition of differentiated large and small groups. This is true of the ideal as well as of the closely related practical universe. The concept of differentiation does not become logically divorced from the concept of homogeneity. In Bishop's system it does. Reliance on the elasticity ratio excludes the unity of treatment here preserved. Bishop is aware of the fact that the elasticity ratio assumes the meaningless value of infinity divided by infinity in pure competition as well as in pure oligopoly.[21] His "near-pure" structures are defined with the aid of a concept which gives meaningless results for the "pure" structures. Why invite this logical difficulty if the concepts causing it are unecessary additions to upward and downward cross-elasticity which alone are required for classification?

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[21] In pure competition this is true only if downward cross-elasticity is used for computing the elasticity ratio. But Bishop thinks in terms of downward cross-elasticity. For the undifferentiated structures the logic of the elasticity ratio breaks down because if the effect of a price change undertaken by a single rival is expressed by "infinite," then the relative importance of that rival cannot be measured by comparing this effect with that of a price change undertaken by all rivals.

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Elasticities, Cross-Elasticities, and Market Relationships: Comment

The article by R. L. Bishop on "Elasticities, Cross-Elasticities, and Market Relationships" followed, and apparently received a strong orientation from, a prepublication copy of my own paper on "Measuring the Degree of Monopoly and Competition," presented at the Talloires meeting of the International Economic Association in September 1951. In one section of my paper Robert Triffin's classification of the problems of monopoly and competition in terms of cross-elasticities alone, and in particular his statement that the (price) "coefficient of interdependence measures the relative share of monopoly and competition in the situation of the seller"[1] were subjected to various criticisms. It was concluded that cross-elasticity is significant only as a measure of isolation and that "elasticity as well as cross-elasticity is needed to classify the problems of monopolistic competition"—needed specifically as a measure of heterogeneity. In spite of his sweeping criticisms, Bishop seems to agree with me as to the need for elasticity and has even less faith in cross-elasticity than I had retained.

When Bishop's article was published it seemed likely that the proceedings of the Talloires meeting would appear shortly, as indicated by his footnote (p. 779). Alas, a year has passed and they are still in press, but present indi-

[1] *Monopolistic Competition and General Equilibrium Theory* (Cambridge, Mass., 1940), pp. 131-32.

cations are that they will soon be available[2] and that the reader will no longer be obliged to pass judgment on my position without having read my own full development of it in its original context,[3] where its appearance at all is explained mainly by Triffin's having advanced (price) cross-elasticity as a *measure* of monopoly and competition (*cf.* the title of my paper).

One might say loosely that Bishop's major contribution to a satisfactory solution of this range of problems is a convincing demonstration of the complexity, even the treachery, of cross-elasticity as a measure of anything. More specifically, he shows that price cross-elasticity does not provide a clean-cut distinction between isolation and nonisolation: the effect on the sales of firm j of a price adjustment by firm i may be "negligible" even though the supposedly relevant cross-elasticity is high. The reason is that *however small* the relative change in j's sales, $\Delta q_j/q_j$, the relative change in i's price, $\Delta p_i/p_i$, may (owing to high elasticity of i's demand curve) be *still smaller*, thus making the cross-elasticity coefficient, $p_i \cdot \delta q_j/q_j \cdot \delta p_i$, large. This is a demonstration of importance and amounts to showing that cross-elasticities of zero are a sufficient but not necessary condition to isolation. It follows that nonzero cross-elasticities are a necessary but not sufficient condition of nonisolation.[4] Because of Bishop's analysis we must now recognize explicitly that there remain cases of nonzero cross-elasticities where the question of whether a seller is isolated or not must be settled by other criteria.

In recent years I have been concerned to bring into a single category the two concepts of an "isolated monopolist" and of a single seller in the "large-numbers-differentiated-product" case; and this is an important part of the background of the classification appearing at the end of my Talloires paper.[5] A monopolist who is isolated in the sense of being able to disregard the interdependence between his own market and those of others is described in *Monopolistic Competition* as so situated that "the effects of a change inaugurated by [him] are spread over such a large number of competitors that they are negligible for each.[6] Similarly, the "large group" case is characterized by the fact that "any adjustment of price or of 'product' by a single producer spreads its influence over so many of his competitors that the impact felt by any one is negligible and does not lead him to any readjustment of his own situation" (p. 83). It seems clear that these two concepts come to the same thing, and it is important to identify them for a number of reasons. One of the reasons is to make clear that ordinary, traditional (isolated) monopoly, now commonly known as "pure" monopoly, is not pure at all, but an integral part of the monopolistically competitive system.[7] Such a monopoly may in

[2] *Monopoly and Competition and their Regulation* (London, Macmillan and Co.).

[3] This implies no misrepresentation by Bishop.

[4] *Cf.* Bishop, *op. cit.*, p. 787.

[5] *Cf.* also "Monopolistic Competition Revisited," *Economica*, Nov. 1951, XVIII, 353.

[6] *The Theory of Monopolistic Competition*, 6th ed. (Cambridge, Mass., 1948), p. 74.

[7] Bishop speaks of my "*long-standing conviction* that there is no such thing as a 'pure monopoly' short of a simultaneous monopolizing of all economic goods" (p. 785, n. 10, italics mine). It is indeed a "conviction" of long standing, but the language seems strange in view of the fact that the concept of pure monopoly certainly came into modern eco-

fact be correctly regarded as a single firm in a "large group" of some appropriately broader category. Similarly, a single seller in a group free from oligopolistic influences appears to be isolated as truly as the traditional monopolist (and therefore in the now prevalent terminology would be a "pure" monopolist, which is absurd).

From these considerations comes a second reason why the identification in question is important, *viz.*, that isolation and nonoligopoly are thus revealed as the same thing. This is certainly not what Triffin says in his schema, where, among other things, "isolated selling" is clearly not a part of "heterogeneous competition."[8] Yet in using cross-elasticity coefficients to distinguish isolation from nonisolation, I have merely followed Triffin (and also general usage) in this particular matter. It is not clear to me whether Bishop regards isolation and nonoligopoly as the same thing; but it is clear that his criticism of my use of price cross-elasticity as a test for *oligopoly* is equally applicable to Triffin's use of it as a criterion for *isolation*: Triffin's coefficient may be significantly large consistent with the isolation of firm *i*.

For these and other reasons, the manner in which Bishop singles out my own analysis and classification for nothing short of total condemnation seems strange indeed. Even though criticised only in part, it is rejected *in toto* as "unsuccessful" (p. 794), and, again *in toto*, because it "breaks down completely" (p. 797). This disposition follows the setting up of an unqualified black-and-white contrast between Triffin and myself: "I have chosen Triffin and Chamberlin as the principal antagonists [sic]," he says, "because of the dramatic clarity of their differences" (p. 785, n. 11). The differences are indeed substantial, but in pressing his contrast to the limit, Bishop is obliged to minimize (for instance, as "temporary back-sliding," p. 788) or to ignore altogether Triffin's very substantial use of price cross-elasticity, both as a measure of monopoly and competition and in testing for oligopoly; and to give to Triffin's position a one-sided definiteness which it simply does not have. This procedure causes great confusion, not only in understanding and appraising the real position of each of us, but also (and more important) in understanding the fundamental issues of the problem. It is especially confusing when we look at Bishop's own classification and find that in the end it is Triffin's which has been completely rejected and that he follows me as against Triffin (without saying so) in taking "own" elasticity, not cross-elasticity, as the proper measure of heterogeneity (pp. 797-98 and table).

nomics (possibly the term itself was used earlier—I do not know) as a part of my own terminology (*cf. Monopolistic Competition*, pp. 63-64) and is now widely perverted to a completely different meaning, usually without even a reference to its original one. The matter is important because the definitions of the two *limiting* cases of pure monopoly and pure competition are necessarily a part of the interpretation one gives to the theory "intermediate" between them, so that to redefine one of them is disastrous.

[8] *Op. cit.*, p. 104. In my Talloires paper I had criticised Triffin's identification of "heterogeneous competition" with a "finite value" of cross-elasticity, pointing out that "the coefficient approaches zero, not only under 'isolated selling,' but also under heterogeneous competition with 'large numbers.'" Bishop seems to agree with this criticism, for he refers to "the fact that this cross-elasticity may be indefinitely small under differentiated competition" as "at least somewhat embarrassing for Triffin" (p. 786).

Does Bishop's criticism invalidate the use of price cross-elasticity coefficients to measure the influence of one firm upon another, and hence to indicate the presence or absence of oligopoly? Certainly it does not completely, for a coefficient of zero[9] is still a sure sign of isolation, even though we may have isolation without it. But it appears certain that its usefulness is diminished. As I have indicated above, we are limited now to saying that zero coefficients are sufficient but not necessary to isolation, and that nonzero coefficients are necessary but not sufficient to nonisolation. The problem remains of distinguishing which of the cases with nonzero coefficients are isolated and which are not.[10]

After all, it is not surprising that this intermediate area should exist.[11] Tabular arrangements of coefficients may have their limited usefulness, but they also run the danger of making the problem look deceptively precise. I am bound to say that I still find unobjectionable my own statement of twenty years ago, as a description of isolation. It was quoted earlier, but let me repeat it: "that any adjustment of price or of 'product' [or of selling outlay] by a single producer spreads its influence over so many of his competitors that the impact felt by any one is negligible and does not lead him to any readjustment of his own situation."[12] It should be noted that zero cross-elasticities, though sufficient, are not necessary to isolation in this sense; and also that in the vexed case of pure competition, however one may rule as to the value of the cross-elasticity coefficient, a single seller is isolated in the sense described.

Recognition that the line of separation between isolation and nonisolation is not precise in terms of some particular cross-elasticity coefficient seems to me to affect in no essential way the argument of my earlier paper. For instance, I continue to hold that the individual seller is isolated under what Bishop calls differentiated competition; also under pure competition; and that the essential distinctions are between heterogeneity and homogeneity, isolation and nonisolation. The implications of this conclusion are decidedly different from those of Bishop's classification, especially when the "loose ends" of this latter are taken into account.

The coefficient proposed by Bishop as an indicator of oligopoly, *viz.*, $-E_{ii}/E_{ji}$, takes us back to the familiar "numbers" criterion for "well-defined groups" of sellers of equal size with perfectly symmetrical relationships between them; and it is interpreted as a "numbers equivalent" where these conditions are not met (p. 798). It is, as Bishop points out, not "perfectly

[9] In both directions and for completeness, of course, with respect to *all* elements of the problem, such as price, quantity, product, selling outlays, etc.

[10] This would include also the cases where some of the coefficients involved were zero and others were nonzero. For instance, in Bishop's case where the "own" elasticity of firm i's demand curve is high (*cf.* p. 911, above), the substitution of q_i for p_i in the cross-coefficient converts it from large to very small.

[11] A number of the factors which help to explain it are mentioned in *Monopolistic Competition*, Ch. 3 *passim*, esp. pp. 48-53.

[12] *Monopolistic Competition*, p. 83. (*Cf.* also p. 150). Triffin's translation of this statement into mathematics (*op. cit.*, p. 102), out of which his coefficient developed, certainly leaves much to be desired.

general," since it "breaks down in the case of literally homogeneous products." Hence in his classification "the limiting case of perfect homogeneity [is] not represented"—the nearest we get to it is "near-homogeneity." It is therefore necessary outside of the table to distinguish between pure competition and pure oligopoly, and between differentiated competition and "pure monopoly" (in the sense of an isolated seller). These "loose ends" involve major differences with my own classification which are perhaps more important than those contained within the table, and the reader will have to judge them for himself. The distinction between "differentiated competition" and "pure" (*i.e.*, isolated) monopoly involves the "industry" concept which, however useful it may be in particular problems, seems to me a delusion for this purpose. My own reasons for avoiding the "industry" concept and for approaching the oligopoly problem not as a matter of numbers but as a matter of the isolation or nonisolation of individual sellers, are explained at some length in my paper.

I should like to comment finally on one of the contrasts between Triffin and myself which is given great importance by Bishop—the question of whether costs should be allowed to influence a price cross-elasticity coefficient, or whether, on the other hand, this coefficient should, like "own" elasticity, be kept a matter of "pure" demand relations. On this issue Bishop sides with Triffin, holding that the effect of costs should be ruled out, and he has harsh words for those of the opposite opinion, of which I seem to be one.[13] The issue is dramatized by the common view that under pure competition the coefficient is zero if rising marginal costs are allowed, and ∞ if they are not allowed, to limit the increase in sales of the firm which shades its price. It appears to me now that neither of these conclusions is as certain as has generally been thought, and that the answer will in each case depend upon some further questions of interpretation.[14] But let us first look into the question of whether the effects of cost considerations must necessarily be ruled out of price coefficients on general grounds, regardless of the market structure involved.

In arguing that costs should be excluded, Bishop holds in effect that there is a single "correct" answer to the question, and this I cannot accept. Both types of coefficient seem to exist in the sense that they can be defined, and it is simply a question of their relative usefulness. He argues furthermore that the answer must be the same for both elasticity and cross-elasticity, *i.e.*, that since it is absurd to "invoke supply restrictions" with respect to elasticity, it is necessarily so with respect to cross-elasticity (p. 792). But this argument by analogy makes no sense to me; and no one so far as I know has proposed

[13] I agree with Bishop that the "other combatants" should not be neglected (p. 785, n. 11), but cannot take the space here to discuss them. Incidentally, Triffin's use of profits in what appears to be his final and "general" statement on defining the oligopolistic problem (*op. cit.*, p 115) clearly includes costs.

[14] In particular, the distinction between the *magnitude* of the adjustment and the value of the coefficient as a derivative is essential. The problem can be formulated in such a way that the rising cost curve of the firm i (which shades its price) reduces $\Delta q_j/q_j$ to zero *by limiting the magnitude of the adjustment,* but without affecting the value of the coefficient itself.

modifying elasticity of demand by introducing "supply restrictions." The fact is that cross-elasticity is *not* a relationship between the demand functions of two firms, and therefore can never be "pure" in this sense.[15] The coefficient between two firms cannot be discovered from their two demand curves because it depends also on such matters as the number of "other" firms and a complex of interfirm relationships not contained in the two curves. Neither one of their demand curves is in fact involved in the coefficient in any direct sense. When firm i shades its price there is no movement along its demand curve so far as *cross*-elasticity is concerned: i's increment of sales does not appear in the coefficient. As for firm j, what is involved is diminished sales at the *same* price, in other words a redefinition of its demand function rather than a movement along it. In the broadest sense, cross-elasticity involves "the rest of the economic system," and in describing the effect on q_j of a change in p_i there seems to be a good case for describing it as it actually is, rather than ruling out any part of the restraints which the system has imposed upon it in transmission from i to j.[16] Bishop speaks critically of "those writers who measure cross-elasticity, following an assumed price cut, not in terms of customers' willingness to buy, but in terms of the firm's willingness to *sell*" (p. 792, italics his). This is incorrect. The coefficient as used by the writers in question does measure the amount which j's customers are willing to buy (from j, naturally) as the result of a price cut by i.

I shall not take the space here to discuss adequately the behavior of the price cross-elasticity coefficient under pure competition, for the reason that this appears to be a rather complicated problem under the theory of limits, with several different answers depending on how it is conceived mathematically. To state only three possibilities, the coefficient may be defined as (1) the limiting value of $p_i \cdot \Delta q_j/q_j \cdot \Delta p_i$ as $\Delta p_i \rightarrow 0$, the number of sellers and "own" elasticities being either (a) very high but finite, or (b) infinite; or (2) the limiting value of (1) as the number of sellers approaches ∞, "own" elasticities being given; or (3) the limiting value of (1) as "own" elasticities approach ∞, the number of sellers being given. The list is not exhaustive, and it should not be overlooked that, under certain definitions of the problem, numbers and elasticities will be functionally related. It seems doubtful if any one solution can be designated as *the* "correct" one, and doubtful therefore whether the price coefficient, which changes from 0 to ∞ and back again to indeterminate-

[15] Perhaps the elasticity of substitution between two commodities might qualify as "pure" in the sense of having to do only with substitutability. It is, of course, a completely different concept from cross-elasticity of demand, although I believe there is much confusion on this point. As a simple example, the elasticity of substitution between two brands of canned peas may be very high, but if there is a "large number" of other similar brands, cross-elasticity of demand may be very low. Kaldor seems to go astray here (*cf.* "Market Imperfection and Excess Capacity," *Economica,* Feb. 1935, V, 35, n. 1).

[16] I do not mean to rule here that any particular kind of mathematical function or procedure is the "right" one, since I am in fact protesting against Bishop having done just this. Thus demand curves are not necessarily Marshallian, in the sense of being obtained by holding all other prices constant, and however defined, their elasticity may be measured. Similarly, there is no single requirement as to what must be held constant and what allowed to vary when cross-elasticity is measured.

ness with a slight flick in the definitions, may be usefully applied at all to this limiting case. For economics the important concept is isolation, and however the cross-elasticity coefficient may be evaluated under pure competition there can be no doubt whatever that the individual firm is isolated in the sense that it has no influence on any other firm.

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Reply

My differences with Professor Fellner may be focussed on a single issue of central importance. Fellner maintains, in both his Tables I and II, that upward cross-elasticities must be zero between any two firms in atomistic competition (pure or differentiated); and he holds, similarly, that positive upward cross-elasticities necessarily imply oligopolistic interdependence. It is my view that cross-elasticities (upward and downward) may be positive, and indeed very large, without implying oligopoly. Specifically, cross-elasticities will be high between any two members of a large-number group when the products of the rival firms are sufficiently near the homogeneity pole. Fellner's conclusion (usually without the upward-downward distinction) has been the instinctively plausible one to many people.[1] Hence it is all the more important to emphasize the grounds for my different view. I do so by means of a numerical example.

Imagine 1,000,001 suppliers of physically comparable but very, very slightly differentiated products. Assume that the firms are all charging equal prices and selling equal quantities. Assume, furthermore, that if the ith firm's price is raised very slightly (with all other prices constant), all but a negligible fraction of the business lost by that firm is transferred, in equal amounts, to the 1,000,000 other firms in the group. This means that the change in q_i will be (approximately) 1,000,000 times the opposite change in any other group member's q_j—in both absolute and percentage terms. For example, if p_i is increased so that q_i declines by 1 per cent, each q_j will increase by (approximately) .000,001 per cent. This is the negligible impact of one atomistically competitive firm on its fellows. I propose to show that it does not necessarily imply a "zero" or negligibly "small" cross-elasticity.

Suppose, now, that the ith firm's own elasticity E_{ii} (up or down) is $-1{,}000{,}000{,}000$. To reduce q_i by 1 per cent, p_i need be raised by only about .000,000,001 per cent. Hence the cross-elasticity E_{ji} is approximately 1,000, since the .000,001 per cent increase of q_j is 1,000 times the initiating percentage increase of p_i.

Now I beg the reader who sits in judgment to contemplate: (1) this very large number of firms; (2) this enormous own elasticity, implying a remarkably close approach to product homogeneity; and (3) this very high cross-elasticity! Is this situation oligopolistic or not? If it is not, let us be rid once and for all of the tempting but quite erroneous preconception that high cross-

[1] Still another example of this view comes from R. L. Hall and C. J. Hitch: "If . . . cross elasticities . . . were not negligible, . . . the situation would thus be oligopolistic"—"Price Theory and Business Behaviour," *Oxford Econ. Papers*, No. 2, May 1939, p. 16.

elasticities necessarily imply oligopoly. Negligible impacts of one atomistic firm on another are not the equivalent of small, let alone zero, cross-elasticities.[2] What *is* small in any symmetrical, large-number group (with finite own and cross-elasticities) is E_{ji} *relative to* $-E_{ii}$.

Before considering the ingenious and challenging ways in which Fellner seeks to avoid these conclusions, I should like to plead guilty to two of his charges: (1) my classificatory scheme is stated in terms of "point" elasticities and cross-elasticities (based on smoothly continuous demand functions); and (2) I regard a large but finite number of firms in a group as sufficient to establish atomistic competition, by contrast with oligopoly. Fellner does not object to either of these practices separately; but he regards their combination as somehow invalid.

As to my use of "point" rather than "arc" concepts, this was also the practice of all my predecessors, including Fellner; for we all used partial derivatives in our elasticity and cross-elasticity notation. Point elasticities are convenient because of their lack of ambiguity. Specifically, they characterize a firm's situation with respect to even the smallest conceivable price-quantity change; and they also reflect, approximately, the implications of small, finite changes.[3] The underlying conception of smoothly continuous demand functions is, of course, an "idealization"—but again one that is familiar, convenient, and often (though not always) a defensible approximation of discrete reality. My basic disagreement with Fellner concerns his view that there is some tying clause in the theorist's contract that necessarily links this idealization with another quite different one—namely, an insistence that atomistic competition cannot exist with anything short of an "infinite number" of firms.

In the context of Table I, Fellner uses point cross-elasticities but refuses to classify a situation as atomistically competitive unless there is an "infinite number" of rival firms. He would thus classify my numerical example, above, as an instance of "differentiated oligopoly." As long as Fellner remains within the context of his Table I, a million suppliers of perfect or near-perfect substitute products are just a million oligopolists. I regard such situations as constituting either pure or near-pure competition.

To Fellner, the mere use of point elasticities and cross-elasticities by the analyst implies an assumption of "infinite sensitivity" on the part of the firms, which in turn would imply (in his view) that any finite-number group is necessarily oligopolistic. Several methodological questions of some subtlety are involved here; but the main point, it seems to me, is that Fellner here confuses the mere use of a convenient *analytical tool* (point elasticities) with an unjustifiably stringent *empirical assumption* (that, if a firm can detect even the

[2] Naturally, cross-elasticities are not *necessarily* high in atomistic competition. Even when products are still very nearly perfect substitutes, E_{ji} will be very low provided that the number of firms is sufficiently large. In my numerical example, E_{ii} need be changed only to $-1{,}000$ in order to reduce E_{ji} to .001.

[3] It is for this reason that there is no inconsistency in drawing conclusions about the consequences of small finite price changes in the light of elasticities that are based on infinitesimal price changes. But I cannot accept Fellner's contention (pp. 905-06) that the "valid content" of my article is *limited* to a context of "finite price changes."

smallest effect on itself of another firm's action, its reaction will necessarily be such as to establish oligopolistic interdependence).

Oligopolistic and atomistic *behavior* are distinguished according to the presence or absence of effective collusion. We merely try to predict the outcome of that "behavior" test by means of such "structure" tests as the number of firms.[4] If "numbers" are sufficiently large, we infer (empirically) that any relevant change of business decision by firm i will have, at most, a "negligible" impact on j; and we then conclude (empirically) that j's reaction, if any, will also be "negligible." It is not necessary that either the initial effect or the reaction be literally "imperceptible," but only that the interfirm repercussions be negligible *even if perceived*.

For example, a purely competitive firm will typically affect price ever so slightly if it changes its output substantially; but the situation will still be purely competitive, for all practical purposes, if the demand schedule relevant for the firm's output decision differs only negligibly from the strictly horizontal. This does not require that the change of that firm's output will have literally no effect on the outputs of the other firms, but only that the reactions of those other firms must not be such as to destroy the approximate horizontality of the relevant demand facing the one firm.[5] The main point is this: if the negligible impact of any one firm on its fellows gives rise to only microscopic, "passive" reactions, there can be no significant degree of oligopolistic interdependence. The equilibrium position of each firm will then differ only negligibly from what it would be if the effects of one firm on another were regarded as wholly imperceptible.[6]

[4] Alternatively, when groups are not well-defined, symmetrical, and isolated, I use the concept of a "numbers equivalent"—as a substitute for dubiously meaningful, actual numbers. Then $-E_{ii}/E_{ji} = n_i - 1$ implies that the effect of a change of p_i on q_j is *as if* the two firms *were* members of an ideally symmetrical, isolated group of n_i firms.

Fellner thinks that my choice of "numbers equivalent" as a name for this concept "may not be fortunate" (p. 909). My reason for that choice is that the *analogy* to the number of firms in a well-defined, symmetrical group is intuitively meaningful. On the other hand, because a "numbers equivalent" is applicable "even when there is no distinct grouping of firms" ("Elasticities, Cross-Elasticities, and Market Relationships," *Am. Econ. Rev.*, Dec. 1952, XLII, 789 and 798-99), the concept is in no way dependent on the "industry concept" (*cf.* Chamberlin, pp. 913-14).

[5] Naturally, the demand relevant for a firm's price-output decision is not, in general, a *ceteris paribus* demand; but it is an essential condition of atomistic competition (pure or differentiated) that the other-prices-constant demand be a very close approximation of the relevant demand. For example, if all the members of a purely competitive group have *fixed supplies*, the relevant demand facing the ith firm has an elasticity equal to n_i times the industry-demand elasticity, where n_i is the ratio of industry quantity to the ith firm's quantity (*cf. op. cit.*, p. 795, esp. n. 26). With *variable supplies* (upward-sloping marginal costs), the relevant elasticity is even higher; for a given increase of q_i, lowering price very slightly, will then reduce all the q_j's microscopically, and so cause price to fall even *less* than in the case of fixed supplies (*op. cit.*, p. 797, n. 28).

Although "negligible" and "imperceptible" are often used loosely as synonyms, I feel that it is neither necessary nor desirable to make atomistic behavior depend on the myopia or the "limited sensitivity" of the firms, as Fellner would have it (p. 904, esp. n. 12). In my view, the mere "awareness" of *very small* effects is not likely to give rise to oligopolistic *behavior;* and it is this presumption as to behavior, it seems to me, that is the proper focus of market classification.

There is a world of difference between such microscopic, passive reactions and oligopolistic interdependence. The typical oligopolistic reaction to a price cut is not just passive, but retaliatory. That is, it is designed to discourage such price cutting in the first place, even at the immediate cost of the retaliator's hurting himself even as he seeks to discipline the aggressor. Oligopolistic collusion, explicit or tacit, accordingly implies a *reluctance* to make certain aggressive moves *solely* because of an expected or feared reaction from one or more rivals. Hence an oligopolistic "equilibrium" typically implies that the firms are at positions significantly different from those that would be implied if the firms were to make their business decisions on an assumption of negligible reactions from rivals.

The likelihood that collusion will be attempted—and if attempted, successful—depends not only on the mere perceptibility of the effects of one firm's actions on another, but on the *magnitude* of those effects and the *character and magnitude* of the reactions. Least of all can the likelihood of oligopolistic behavior be prejudged simply on grounds that the analyst chooses to use point elasticities (or arc elasticities that are based on very small finite price changes). I confess I am somewhat surprised to have to rebut a view that the principles of *Competition Among the Few* are now automatically applicable to "competition among the few million" simply because the author used point elasticities.

I also have misgivings about Fellner's use of the concept of an "infinite number" of firms. Some limits can be reached (*e.g.*, an absolutely homogeneous product). Others cannot (*e.g.*, an "infinite number" of firms). "Infinity," in this context, is not a "number" but simply an implication that there is no finite limit. In Fellner's Table I, point cross-elasticities (upward and downward) are *infinite* when identical products are supplied by any finite number of firms. But he also believes that, with an "infinite number" of firms, the upward cross-elasticities will be uniquely *zero*. Now if this is to mean anything at all, it must mean that the upward cross-elasticities *approach* zero as the number of firms grows indefinitely large. But this they do not do, on the testimony of Fellner's own Table I. With strictly homogeneous products, the leap from infinite to zero cross-elasticity takes place only in a never-never land of "infinite numbers" of firms. Hence it is not consistent with the basic principles of taking a limit.[7]

Provided that there is a very large number of producers of a homogeneous product, I also think that either the Cournot model or the Bertrand model is quite acceptable (again *cf.* Fellner's n. 12). These two models then give approximately the same results. They give significantly different results, and are both unacceptable, only when the number of firms is small. In other words, neither Cournot nor Bertrand had a satisfactory theory of *oligopoly;* but they both did have satisfactory theories of *competition.*

[7] In the foregoing paragraph I have willingly repressed my own misgivings about the determinacy of cross-elasticities when there are three or more suppliers of absolutely homogeneous products (*op. cit.*, pp. 793-94). I am willing to follow the convention that Fellner seems to accept—namely, that any change in q_i will affect oppositely, to at least some extent, every other q_j in the group. Then the cross-elasticities within the homogeneous-product group are all infinite no matter what the number of firms—just as the cross-elasticities *approach* infinity when product homogeneity is merely approached, for any given number of firms.

A fundamental logical trouble that has afflicted cross-elasticity pronouncements from the very beginning is that two kinds of limit are involved: (1) if own elasticities are constant and finite (because the product is not strictly homogeneous), a steady increase in the number of firms in the group does imply a steady *decrease* of cross-elasticities toward *zero* as a limit (never actually reached); and (2) if the number of firms is constant, an approach to product homogeneity implies a steady *increase* in cross-elasticities toward *infinity* as a limit.[8] Fellner's mistake, as I see it, is in supposing that the number-of-firms limit (which cannot be reached) must be dominant over the product-homogeneity limit (which can). If *both* of these limiting processes are operating simultaneously, no one can say *in general* how the cross-elasticities will behave.[9] But cross-elasticities may assuredly be either high or low no matter how many firms there are in the group. It all depends on the number of firms *relative to* the degree of product homogeneity (as reflected specifically in the own elasticities).

In the context of Table II, Fellner relaxes his requirement that there must be an "infinite number" of firms for atomistic competition; but now he insists that cross-elasticities must be based on "*ad hoc* selected finite price changes." He also specifies the treatment of "subjectively unnoticed ('negligible') quantities as zeros." When products are homogeneous (absolutely or practically) and firms are many as in my opening example, a negligible increase of p_i has a negligible effect on q_j. Hence the upward cross-elasticity would be "negligible" over "negligible," which at least suggests—if it means anything at all—the indeterminate form of zero over zero. More fundamentally, as long as Fellner refuses to measure "neglibles," he has no grounds for asserting anything whatever about their ratios to one another.

Fellner would say, however, that his upward "incremental" (or arc) cross-elasticities are uniquely zero in my numerical example. Clearly, this is not just a matter of "point" versus "arc" elasticities; for my own example was stated in terms of a finite price increase, and the "incremental" cross-elasticities turned out to be very high. Fellner gets his result of a "zero" cross-

[8] For a welcome expression of essentially the same view, see Chamberlin's limiting processes (2) and (3), p. 915. Fellner, on the other hand, implies a denial that the latter limiting process is a continuous one. Defending a position taken earlier by Chamberlin, he maintains that "while cross-elasticity may be infinite in the undifferentiated large group, it falls to zero with the least differentiation" (p. 902, n. 4). It falls to zero, say Fellner, because "in the event of the least differentiation the sales-increment of the price-reducing firm can be made smaller than *any* finite magnitude provided that the price reduction becomes small enough." This remarkable argument implies that *every* finite derivative and elasticity is zero. My opening numerical example provides my own positive demonstration of nonzero and *high* cross-elasticities in the "large group . . . with the least differentiation."

[9] In the second paragraph of n. 4, p. 902, Fellner implies agreement with this view; but he fails to recognize that it undermines his central thesis as to the uniquely zero upward cross-elasticity in pure competition.

Although Chamberlin now seems to be with me for the most part on these questions, our agreement is still not complete. His limiting process (1) on p. 915 implies that there is a limiting value of the expression given there when "the number of sellers and 'own' elasticities" are "infinite." This is the same meaningless concept for which I am criticizing Fellner.

elasticity only by specifying that the price increase must *not* be negligible, even though a much smaller—and specifically negligible—price increase must be sufficient to remove the homogeneous-product supplier from the market. In my example, something on the order of a .000,000,1 per cent increase in p_i would very likely be enough to reduce q_i by 100 per cent.[10] That would increase each of the q_j's of the 1,000,000 other firms in the group by about .000,1 per cent; so the cross-elasticities would still be on the order of 1,000. Hence, to reduce the cross-elasticities even to 1, Fellner would have to specify a price increase about 1,000 times larger than necessary to remove the price-raiser from the market; and to reduce the cross-elasticities to .001, he would have to specify a price increase about 1,000,000 times larger than necessary.

Although Fellner does not indicate just how arbitrary his "*ad hoc* selected finite price changes" are, they are "*ad hoc* selected" simply to make the upward cross-elasticities sufficiently small for his own taste—when he wants them to reveal atomistic competition. This reminds me of Humpty Dumpty's practice: "When *I* use a word, it means just what I choose it to mean—neither more nor less." When Fellner measures an incremental cross-elasticity under conditions of pure or near-pure competition, its magnitude is just what he chooses it to be.

In my own classificatory scheme, despite Fellner's strictures, there is no *general* need for a distinction between "upward" and "downward" elasticities or cross-elasticities. Such a distinction would be needed only if the firm were to operate at a point where there is a "kink" or discontinuity of slope in its demand curve.[11] Such a "kink" in a consistently other-prices-constant demand curve results, for example, when some buyers regard the products of two or more firms as homogeneous, while others regard them as differentiated.[12] Because this phenomenon implies that the demand slope is first negative and then changes abruptly to zero at a critical point, no firm will actually operate at that point. Rather, some firms will compete for the homogeneous-product business, and thus be somewhere on their demands' horizontal stretches, while others may be content to exploit their demands' downward-sloping portions. Depending on the number of firms, those with locally horizontal demands are, in effect, in situations of either pure competition or pure oligopoly. On the other hand, *smoothly continuous* demand functions always imply *equal* upward and downward elasticities, both own and cross. That is, the point

[10] This implies that the demand for the *i*th product is approximately linear. I am assuming—as is certainly possible—that the price increase necessary to reduce quantity by 100 per cent is approximately 100 times the price increase that reduces quantity by 1 per cent.

[11] The familiar, oligopolistic "kinked" demand is not germane here. That is based on an other-price-constant demand for price increases and an other-prices-changing demand for price decreases. Fellner and I are both talking about other-prices-constant demand relationships.

[12] *Cf.* A. J. Nichol, "The Influence of Marginal Buyers on Monopolistic Competition," *Quart. Jour. Econ.*, Nov. 1934, XLIX, 121-35; Alfred Nicols, "The Rehabilitation of Pure Competition," *Quart. Jour. Econ.*, Nov. 1947, LXII, 31-63; Joe Bain, *Pricing, Distribution and Employment*, rev. ed. (New York, 1953), pp. 353-55; and Ron Hieser, "A Kinked Demand Curve for Monopolistic Competition," *Econ. Rec.*, May 1953, XXIX, 19-34.

elasticities are exactly equal; and the arc elasticities based on sufficiently small price changes are approximately equal.[13]

Naturally I am gratified that Professor Chamberlin now agrees with me that the cross-elasticities E_{ji} and E_{ij} are not, by themselves, a reliable indication of the presence or absence of oligopoly. It was because he had proposed these cross-elasticities as his test for oligopoly that I characterized his classification as "unsuccessful."[14] I regret, however, that I have left him with only a negative conviction of the "complexity" and "treachery" of cross-elasticities "as a measure of anything" (p. 911); for—when products are differentiated, however slightly—the *ratios* of cross-elasticities and own elasticities do seem to provide the oligopoly test for which he has been unsuccessfully searching. As for my having adopted E_{ii} as my own preferred criterion of product homogeneity-heterogeneity, I am happy to acknowledge that I did indeed follow Chamberlin in this.

In his Talloires paper, as Chamberlin now says, he criticized "Robert Triffin's classification of the problems of monopoly and competition in terms of cross-elasticities alone" (p. 910).[14a] He also feels that I exaggerated the contrast between Triffin's views and his own; and, by way of illustrating this, he says that I "ignore altogether Triffin's very substantial use of price cross-elasticity . . . in testing for oligopoly" (p. 912). It is my view, on the contrary, that Triffin relied principally on the quantity cross-elasticity e_{ji} in testing for oligopoly. His only use of the price cross-elasticity E_{ij} for that purpose, it seems to me, was in conjunction with e_{ji}—in his "circular test."[15] Hence I also feel that Chamberlin's critique of Triffin's schema—by concentrating solely on E_{ij}, to the neglect of e_{ji}—was seriously incomplete. I say this only to emphasize that Chamberlin's objections to the contrasts that I found between Triffin's discussion and his own do indeed reflect fundamental differences between us in our understandings of Triffin.

Several matters discussed by Chamberlin seem to be mainly if not entirely verbal. He wishes "to bring into a single category the two concepts of an 'isolated monopolist' and of a single seller in the 'large-numbers-differentiated-product' case"—because "these two concepts come to the same thing" (p. 911). Everyone agrees, I think, that these two cases are alike to the extent that they are both nonoligopolistic. Beyond that, it seems to me mischievous in the extreme to suggest that there are no significant differences between them. The traditional, simple monopolist is "isolated" because there are *no* significantly close substitutes for his product. The differentiated competitor is "iso-

[13] I detect no belief on Fellner's part that "kinks" are as universal as his "upward-downward" distinctions would seem to imply. The one such contrast in his Table I, I have argued above, is the result of faulty logic. The omnipresent contrasts of this kind in his Table II are manufactured by his arbitrary use of incremental cross-elasticities.

[14] Although at one point Chamberlin might now seem to be minimizing his former "faith in cross-elasticity" (p. 910), there is no question that he did use that concept to distinguish (in his own terminology) "isolated selling" and "nonisolated selling."

[14a] I assume from the context of the Talloires paper that this refers only to *price* cross-elasticities.

[15] Triffin, *Monopolistic Competition and General Equilibrium Theory* (Cambridge, Mass., 1940), pp. 104-5 and 134.

lated" in a very different sense, because he is lost in the crowd of so *many* suppliers of relatively close substitutes that his relationships to his competitors are again nonoligopolistic.[16]

Another of Chamberlin's verbal problems concerns just this ambiguity of the word, "isolation." For Triffin, "isolated selling" is associated with "pure monopoly," and *not* with atomistic competition, whether pure or differentiated. Yet for Chamberlin, isolation and nonoligopoly are "revealed" as the same thing (p. 912). The correct word is "defined"; and we can take our choice in following either Triffin's or Chamberlin's definition.[17]

The last verbalism is the term, "pure monopoly." An overwhelming majority of economists prefer to equate this with the traditional concept of monopoly. Thus we have not followed Chamberlin's own distinctive definition of "pure monopoly"; but we do not feel that we have "perverted" anything in setting up simply a different definition from his. Nor does the redefinition seem "disastrous" (p. 912, n.7). I, for one, rather feel that it is healthy to resist the theoretical imperialism by which Chamberlin would swallow up traditional, simple monopoly as just another species of monopolistic competition.[18]

I have little to add to my earlier discussion on "the question of whether costs should be allowed to influence a price cross-elasticity coefficient."[19] I do believe, however, that it is just as ill-advised to "invoke supply restrictions" with respect to cross-elasticities of demand as Chamberlin concedes it to be with respect to "own" elasticities. The generalized demand for the ith firm's product, on which both E_{ii} and E_{ij} are based, is of the form: $q_i = q_i(p_1, p_2, \ldots p_i, \ldots p_j, \ldots p_n)$. The derivatives, $\partial q_i/\partial p_i$ and $\partial q_i/\partial p_j$ (or the elasticities, E_{ii} and E_{ij}) are then precisely analogous to one another.[20] Moreover, the naked expressions, $E_{ii} = (\partial q_i/\partial p_i)(p_i/q_i)$ and $E_{ij} = (\partial q_i/\partial p_j)(p_j/q_i)$, have perfectly definite meanings; and they cannot be made to stand for anything else except by some more Humpty-Dumptyism.

[16] I also feel that it is perfectly feasible to distinguish the pure monopolist from the differentiated competitor, in terms of the frequency distribution of cross-elasticities (*op. cit.*, pp. 786-87 and 799-800).

[17] Chamberlin also says: "in using cross-elasticity coefficients to distinguish isolation from nonisolation, I have merely followed Triffin. . . ." (p. 912). But, since his definition of isolation is completely different from Triffin's, I cannot agree that my criticism of the "use of price cross-elasticity as a test for *oligopoly* is equally applicable to Triffin's use of it as a criterion for *isolation*. . . ." My criticism would be so applicable only with respect to "isolation" as *Chamberlin* defines it.

[18] According to Chamberlin, "the now prevalent terminology" implies that any nonoligopolistic seller "would be a 'pure' monopolist"—since such a seller is "isolated as truly as the traditional monopolist" (p. 912). It seems peculiar, to say the least, for Chamberlin to attribute this view to his opponents—since it is he who would blur the distinction (which the rest of us seek to maintain) between the traditional monopolist and the nonoligopolistic species of monopolistic competitor.

[19] Chamberlin's discussion is on pp. 914-15; my own is *op. cit.*, pp. 790-92.

[20] The "own" concept is a "diagonal" term, and the "cross" concept is an "off-diagonal" term, in the matrix of either the derivatives or the elasticities, respectively.

Nor is there any notable significance in the otherwise perfectly correct fact that a change of p_i represents a *movement along* a demand of the abbreviated form, $q_i = f(p_i)$, while a change of p_j may *shift* that same $q_i = f(p_i)$. When demand for the ith product is more broadly formulated, as above, that generalized demand function is not "shifted" by changes of either p_i or p_j.

There would be no objection whatever to Chamberlin's defining any alternative concepts that he pleases—with or without reference to costs. When he writes down either partial derivatives or the elasticities based upon them, however, I would hope that he might specify—as he has not done in the past—the *functions* he is differentiating. Only in that way can we judge (a) the meaning and (b) the usefulness of the concepts he may have in mind. In particular, if he thinks he can define meaningful and useful elasticities of demand (including cross-elasticities) by "invoking supply restrictions," by all means let him come forward with a *specific* definition.

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BOOK REVIEWS

Economic Theory; General Economics

Utility and All That, and Other Essays. By D. H. Robertson. (London: George Allen and Unwin. New York: Macmillan. 1952. Pp. 206. $3.50.)

In this volume are assembled sixteen of Sir Dennis Robertson's essays written from 1945 to 1951. They are arranged in four groups dealing with general theoretical matters, with problems of interest and capital, with international economic affairs, with money and banking. The essays vary greatly in length and significance, from one paper which attempts a reorientation of the theory of interest to a number of brief occasional notes. All of the essays afford valuable insights; all are delightful reading for the author's Puckish jibes and asides; and all of them cut through jungles of theoretical pretense or confusion with the keen hard blade of common sense.

The last of these qualities stands forth conspicuously in the first essay, the subject of which has been taken for the title of the collection. Reviewing the recent literature on consumers' surpluses and welfare, Robertson finds that Hicks' and Allen's indifference functions and "revealed preference," designed to operate behavioristically and to dispense with one dimension called cardinal utility, actually make matters more complex. Cardinal utility keeps reasserting itself, and it is better to recognize it explicitly, as Marshall does. The reviewer agrees with Robertson that introspection justifies the concept of cardinal utility; but operationally the difference may not be great. Anyone who prefers to operate with ordinal concepts could read the familiar Marshallian figures correspondingly, since the monetary expression of utility may be in either relative or absolute terms.

In the same essay, Robertson indicates his belief that welfare economics should be able to steer a course somewhat between the one extreme, represented by Myint, who imagines a measure of *social* gain or loss possible even with changes in distribution, and another extreme, represented by Samuelson and Little, who are very sceptical about the possibility of measurement. Most readers will sympathize with Robertson here. They may wish, however, that he had pressed further his suggestion that the maintenance of incentive enters into the problem of maximizing social welfare. Hitherto inequality of distribution has been the rock upon which aggregate social welfare has split up. But if we limit the theory to *functional* inequalities—inequalities necessary to "evoke and maintain" correct relative factor supplies (in Hobson's phrase)—and if we suppose with Lange that the distribution of the capacity to enjoy income is a random one in any fair sample of the population, we approach fairly closely to a social maximum of welfare. Other elements, such as resentment of inequality, would still make precise quantification impossible; but in many situations they might be sufficiently unimportant to permit the desirable *direction* of policy toward maximum welfare to be seen.

In "The Economic Outlook" written in 1947 Robertson, with what in retrospect amounts to prophetic revelation, considers the pitfalls of planning in the English postwar economy. "Years of lowbrow talk about production for use and not for profit, fewer but intenser years of highbrow talk about the humbug of finance and about investment breeding its own saving have left us with a formidable web to unwind" (p. 56). As an antidote to these errors, he quotes the sentence of Marshall that "Progress mainly depends on the extent to which the strongest, and not merely the *highest* forces of human nature can be utilized for the increase of social good." He also broaches the profound question whether there is any final and ultimate distinction between democratic and totalitarian planning.

Robertson's presidential address to the Royal Economic Society, "On Sticking to One's Last," takes issue with a former president, Mr. Hawtrey, and denies that the economist should concern himself with other objectives than economic welfare, such as National Prestige, and Employment (as an end in itself rather than as a means of earning income). The economist is bound to point out, for example, such homely facts as over- or undersupply and the wastage they entail, even if these conditions result from attempts to serve some high principle of moral justice. Conversely he must also distinguish between useful injustices and useless or harmful ones.

The end piece of the first group of essays is Robertson's half-mischievous review of the first volume of *A Survey of Contemporary Economics*. For the "headmaster" of this school (in Robertson's terms) to appraise this review would probably cater only to rare antiquarian interest. For that rare case, the "headmaster" may perhaps be permitted one lapse into bad manners: to confess that Robertson has voiced many criticisms and evaluations of the several papers which the editor felt keenly but suppressed for the sake of decorum.

On the three papers constituting Part II, it will be necessary to bypass in the limits of this review the two occasional essays on "What Has Happened to the Rate of Interest" (December 1948) and "British National Investment Policy" (January 1952). Many of the author's *obiter dicta* transcend occasion, however. "We have got to the stage of admitting that it may sometimes be decent for wages to stop rising and for prices actually to fall, though the admission has still to be wrapped up in layers of witch-hunting formulae about wicked entrepreneurs" (pp. 95-96); and "a State which claims to control the rate of capital growth has undertaken a function for its precise manner of discharging which it will always find it difficult to offer any convincing explanation . . ." (p. 118).

The *pièce de résistance* of the volume, in many ways, is "Some Notes on the Theory of Interest," reprinted from the Williams honorary volume. Robertson supports the view that if net investments are being made, the marginal productivity of capital *always* stands above the rate of interest, and the rate of interest *always* stands above "myopia" or the marginal rate of time preference. If Robertson's first inequality means that there could be neither net saving nor net investment if (using Wicksell's terms) the natural and money rates of interest are equal, a good many contemporary theorists—rightly, I believe

—would disagree. Let the reader review Myrdal's critique of Wicksell's three criteria of equilibrium in *Monetary Equilibrium,* particularly the last pages dealing with the money-natural rate criterion.

Robertson's second inequality, the excess of the rate of interest over the marginal rate of "myopia," said to be necessary for net investment, involves two difficulties. In the first place, does this or does it not imply that even without net investment a positive rate of interest would be necessary to overcome marginal myopia (or time-preference)? In other words does "real myopia" entail a positive interest rate in a stationary economy? And if so, what gives myopia this characteristic? In the second place does myopia or time preference give hostages to the fallacious idea that saving is just "postponing consumption"? Are they rational or irrational, the latter being implied at the end of page 99? Do they have *any* meaning not better conveyed by the perfectly colorless phrase "the supply schedule of saving"?

Other parts of this essay, dealing with Keynes' liquidity preference and Kaldor's speculative theory of interest and Cassel's contributions, move upon firm terrain.

In Part III, the very short essay on the Terms of Trade will be perennially valuable for its lucid differentiation of various meanings of this term, and of the gains from the terms of trade and the gains of trade in general. But it would be too laborious to note all of the contributions of this small volume to theoretical insight and to practical common sense. These qualities are not quite separate matters from a sense of humor and a sense of modesty. Consult in the index the items "Tweedledee" and "Tweedledum" for one example among the many.

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The Political Economy of Monopoly: Business, Labor and Government Policies. By FRITZ MACHLUP. (Baltimore: The Johns Hopkins Press. 1952. Pp. xvi, 544. $5.50.)

The Economics of Sellers' Competition: Model Analysis of Sellers' Conduct. By FRITZ MACHLUP. (Baltimore: The Johns Hopkins Press, 1952. Pp. xx, 582. $6.50.)

Professor Machlup's volumes on the economics of monopoly and competition will be highly appreciated by professional colleagues and students alike. These books may perhaps be viewed as two volumes of a single work even though the decision concerning the sequence of the volumes would have to be somewhat arbitrary. The general reader and the student of general economics will be interested mainly in *The Political Economy of Monopoly.* The book on sellers' competition deals with problems which are of interest primarily to the theorist and to the more advanced student who wishes to acquire proficiency in the theory of market relations. In one sense the book on monopoly is a more elementary "first volume" since some of its early sections may serve as a simple introduction not only to the volume itself but also to the theoretical analysis which is found in *The Economics of Sellers' Competition.* Yet in another sense the book on monopoly is the "second volume" without which

the work would be incomplete even for professional readers. It engages much more in the appraisal of *directly* significant problems than does its companion volume which is of "instrumental" character in that it presents, illustrates and further develops a technique of analysis.

The author's appraisal of market tendencies and of government policies is presented in such a way that the reader of *The Political Economy of Monopoly* becomes well acquainted not only with the author's views but also with the factual background of the problem and with the main arguments that can be advanced for and against Machlup's position. This is a substantial merit. The book contains excellent brief summaries of information on the degree of concentration in various industries, with the proper discussion of the fictitious accuracy involved in the data; of the history of anti-monopoly legislation and the significance of mergers; of existing pieces of legislation which promote producers' monopoly; and of labor policies and legislation. The specific conclusions which Machlup derives from this information will not be shared by all readers. But this will not limit the usefulness of the book because the summaries are sufficiently general to make it obvious that subjective judgment is required for reaching final conclusion.

Machlup is aware of the fact that no scientifically documented statement can be made on how much of the existing degree of concentration in the various industries is required for keeping them at a given level of economic efficiency. But while he acquaints us with both sides of the argument, he is nearly always willing to give the benefit of the doubt to the antimonopoly side. Multiplant expansion can in his view be accepted as an almost dependable sign of the growth of a firm beyond the size required for maximum efficiency on a given level of technology; substantial reduction of concentration would almost certainly have a favorable effect on further technological progress; and the reduction of competition in atomistic groups of producers by government interference is almost always unjustified. Hence Machlup suggests not only the vigorous enforcement of the present antitrust laws but he looks favorably also on strong additional measures for reducing the degree of concentration. These include tax policies which treat small enterprise more advantageously than the oligopolistic, and which discourage the accumulation of undistributed profits; freer international trade; a ban, with some exceptions, on intercorporate stockholdings; substantive patent reform; and possibly direct limitation of firm-size. Unionism he takes for granted but he feels that the noncompetitive character of the labor supply might make it desirable to regulate wages by government policy based on definite rules. Thus, in an economy with a stable general price level and high employment, the general level of money wage rates could be made to rise gradually in accordance with over-all economic productivity, while wage rates in specific industries would be allowed to increase at a greater or smaller rate according as there exists labor shortage or unemployment in a specific sector. By such regulation the misuse of monopoly power by unions could be avoided.[1] Antici-

[1] Machlup is inclined to the opinion that the relative share of labor in national income has shown a rising tendency but argues that this need not be a consequence of union activity because the stock of capital has risen more rapidly than the labor supply. If we consider

pating strong political resistance to such a scheme, Machlup describes the limitation of individual unions to specific areas as an alternative measure which would fit into his competition raising program.

In some ways the antimonopoly convictions of the reviewer are less general than those of Machlup. The agreement is complete as to the generality and the significance of the case against business practices of a "predatory" and "discriminatory" kind which by their very nature have the consequence of "artificially" excluding efficient rivals.[2] However, oligopoly that would survive a truly complete suppression of such practices presumably results from real economies of scale. The reviewer, unlike the author, doubts very much even the "theoretical possibility" of eliminating nearly all oligopoly power without sacrificing important technological and organizational economies. It is difficult to imagine fiscal or similarly general policies which would be based on the distinction between such concentration as is required for social efficiency and such concentration as is not. Also, to the reviewer comprehensive wage regulations seem undesirable in economies not operating under a rigid full-employment guarantee; and the alternative proposal to reduce the size of unions would, in his opinion, not change the inflationary potentialities of full-employment periods (nor the long-run trend in income distribution which seems dominated by forces other than unionism). But even readers who dissent from Machlup in these or in other respects should agree that he has presented us with a most lucid, useful and interesting discussion of the factors which must be weighed by anyone desiring to develop an articulate attitude toward problems of antimonopoly policy.

Turning now to *The Economics of Sellers' Competition* we should call attention to the subtitle of the volume which characterizes the author's method. He develops in this book a "model analysis of sellers' conduct." This book examines the consequences of sellers' behavior under alternative market conditions, on the working hypothesis that certain characteristics of these market relations and of entrepreneurial motivation are observable in pure form. Such model analysis can of course give only more or less realistic results. Some readers will place the emphasis on the *more,* others on the *less,* as we know from the extended controversy on marginalism in which the author of the book has played a leading rôle. The reviewer agrees that the traditional

long-run tendencies for the United States since 1920, limiting ourselves to privately produced income before direct taxes, and if we correct for the changing weight of employees in the labor force, I see no basis for the opinion that the relative share of employees has tended to rise. Various published statements by British economists suggest the absence of such a long-run trend for Britain too. In general, the effect of union-induced wage increases on the share of labor may well have become offset partly by price adjustments and partly by induced labor-saving innovations.

[2] Long-run social efficiency considerations may favor "artificially" excluding rivals who in a free market could be successful entrants at any moment of time. Patent legislation exemplifies this proposition. But it is not possible to develop a reasonable argument which would maintain that the social interest requires letting private groups practice "artificial exclusion" as they see fit. In some instances it is easy, in others difficult, to diagnose in practice a business policy as involving artificial exclusion of potential entrants, but the case against such policies seems entirely general to the reviewer as it does to the author.

method of which Machlup is a staunch defender remains significant. We lack analytical systems which would be sufficiently complete to permit of the quasimechanical use of theories for the explanation and the prediction of economic processes. The traditional method of rigorously analyzing simplified or purified processes in ideal models calls for *ad hoc* (informal) adjustments when we are concerned with real cases to which the assumptions apply merely with modifications. But while the method has been severely criticized on these grounds, it remains a fact that important insights have been derived from this type of analysis. In price theory so far no alternative models have emerged which, on a high level of generality, would yield less crude first approximations than those obtainable from the usual concept of market relations and the profit principle. Some of us may feel that Machlup occasionally underemphasizes (plays down) the limitations of the method of "strong cases" but no reader can justly accuse him of failure to call attention to the idealized or purified character of the situations with which he is dealing.

For oligopolistic markets the results of such analysis depend on particular assumptions concerning the nature and the extent of cooperation (collusion) between rivals. However, it is possible to describe main types of cooperative arrangement, and also to formulate reasonable hypotheses as to how the degree of cooperation typically varies with the characteristics of the industry demand (*e.g.,* its stability or predictability) and with other observable market characteristics. Machlup distinguishes carefully between different kinds of "cooperation" or "collusion" and gives a very revealing discussion of alternative types of oligopolistic coordination as well as of varieties of oligopolistic warfare.

The specific discussion of markets with atomistic and oligopolistic properties, with homogeneous and heterogeneous products, and with free and limited entry, is constructive, lively and systematic. The bearing of entry on market results is strongly emphasized. Quality competition and competition in sales effort receive detailed attention, as does of course price competition. Furthermore, in the course of his analysis Machlup directs his readers' attention to problems which frequently are overlooked or are relegated to other areas of economic theory. These include, among others, the nature of profit and rent concepts, the possibility or impossibility of extending the specific equilibrium theories relating to alternative market structures in the direction of general equilibrium theory, the historical race between diminution of the regional (spatial) monopoly element and increasing firm-size. While Machlup makes interesting observations concerning the effect of market relations on the rate of technological and organizational progress, the treatment which this problem receives is not commensurate with its significance.

In these two volumes Professor Machlup offers much in the way of clarification and individual contribution that will prove of considerable interest to the specialist. If to achieve this had been his only objective he could have expressed his ideas in fewer pages. However, at the same time, he wished to explain basic concepts of economic theory and also the content of his own contribution to other categories of readers, particularly to students. Yet I feel that on balance it would have been advantageous to shorten *The Eco-*

nomics of Sellers' Competition. Detailed explanation and illustration do of course help the reader, especially the relatively least expert group of readers which here will consist of advanced undergraduates. But the book inevitably presupposes the kind of interest in formal theory which, if it is real, goes with the ability to follow a more condensed presentation of problems. So far as classroom use is concerned, instructors will not find the book indivisible but they might not find it very *easily* divisible into more or less important sections, and the volume is too long for being used *as a whole* in a theory course which must include several other subject matters of great significance. On the other hand, I feel that it would have been unwise to shorten *The Political Economy of Monopoly* because the space which the book occupies as well as the author's expository skill is required to make the subject intelligible to a group of readers which in this case is potentially much wider. As for classroom use, here it does not matter much that in general courses there will be no time for working through the whole volume. Some instructors will want their students to know more about certain aspects, others about other aspects of the monopoly problem.

What really matters is that both books contain a wealth of material from which readers of many kinds may make selections to their substantial benefit.

WILLIAM FELLNER

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Psychological Analysis of Economic Behavior. By GEORGE KATONA. (New York: McGraw-Hill. 1951. Pp. ix, 347. $5.00)

So wide a field is encompassed by this book that a reviewer must resort to selective generalization, and this is fostered too by the long time that has elapsed since its publication. At this distance, the highly valuable pioneer job that Katona has done yields three major types of insight, and they concern basic problems in economic investigation and analysis that any serious practitioner must feel a need to consider. First, when the actor in economic life is man as modern psychology sees him, rather than the convenient figment—economic man—the job of the economist is altered and Katona indicates how. Second, certain familiar economic problems are considered in a fresh light. Finally, the changed job means a changed order of usefulness of various tools of study, and consequently methods are discussed explicitly and implicitly throughout the book.

On the first score, man is presented in the light of field and Gestalt psychology. Freudian insights, Katona believes, are, though valuable, not essential to the explanation of the economic behavior of groups. The mechanistic stimulus-response sequences of behaviorism are largely rejected. Man's objectives and motives are complex functions of the innate and the acquired. The organization of his behavior takes place within the psychological "field." "The field encompasses people's views of the past, their perceptions of the present, and their attitude toward the future" (p. 174). A notable aspect of this conception would seem to be that varying degrees of certainty and uncertainty are part and parcel of it. It means that the economist "instead of relating the environment to economic processes" directly, must "study the

relation of the perception of the environment, and of the perception of changes in the environment, to organized behavior" (p. 31).

What this basic injunction implies is then illustrated by treatment of a number of important economic problems. For most of them—investment, business cycles, and (in a particularly interesting chapter) profits—lack of pertinent data limits the discussion primarily to analysis. Even so the subjects are for the most part enriched by the insights that Katona brings to them, at the same time that his talent for the homely and concrete succeeds in making the discussions nicely illustrative of his general point. But in the section on consumption, especially on consumer saving, important empirical evidence is presented. The basic data were developed in extensive interviews of individual families done under Katona's direction at the Michigan Survey Research Center. Of the likely factors that might influence saving, information was collected about a number of economic ones—income, past income, purchases of durable goods, and holdings of liquid assets. But the theory also requires that perceptions and attitudes be studied, and consequently "attitudinal" variables—such as expectations about general economic conditions and future income, prices and purchases—were also included. Though I hold with Katona that subjective attitudes must affect economic actions, the showing of the surveys on this score does seem disappointing. I experience some difficulty in evaluating the data because of the failure to present information separately for relatively narrow income groups. Nevertheless, it seems clear that compared to the dramatic influence of major purchases of durables on saving (Tables XXX and XXXI), expectations play a picayune role (Tables XX and XXIX). Is the difficulty one of definition or of failure to differentiate between weakly and strongly held expectations or between those based on the economic scene rather than the stage of the family life cycle? Certainly these studies, like most good research, raise as many questions as they answer.

Finally, the book has much to say, implicitly and explicitly, about method. For when actions are caused by a wide variety of both subjective and objective factors, which are nevertheless believed capable of measurement, the proper way to study them is bound to differ from that appropriate to a world mechanistically conceived. For one thing, the complexity of relevant causation means that it is essential in economic analysis to proceed primarily from the particular to the general. Consequently, micro-economic studies assume critical importance. More specifically, "economic-psychological surveys" are advocated and described in several important sections. But only with some qualifications can analysis proceed from the particular to the general. For in studying "the factors contributing to specific decisions made under certain conditions, instead of attempting to arrive at generally valid answers regarding the how and why of all business procedures, . . . analysis is in need of guiding lines and hypotheses" (p. 214). One source of such guides is economic theory; another is psychology. From the latter, Katona derives a guide of which he makes extensive use—the dichotomy between acts involving habitual behavior and those entailing true decisions. I must say I find this a most unfortunate choice, in which the basic fact that most acts involve important elements of

both the habitual and the elective is lost. Corresponding distortion of economics seems to result. Similarly unfortunate is the sharp juxtaposition of decisions based on "sizing up" a situation and those based on "detailed calculations made on the basis of definite expectations, or of a range of probability distribution of expectations, or marginal calculus" (p. 249), which may constitute a projection into economics of the basic notion of Gestalt psychology. A similar cramping of economics may have resulted if the apparatus of the psychological field was responsible for turning the weight of attention from examination of how decisions to purchase (and then when to purchase) major consumer or producer goods evolve. Though Katona recognizes the importance of such work, especially in the field of investment, discussion actually does center on decisions or expectations as they exist at a particular time, however affected by visions of the past or future.

These are almost necessary weaknesses of first experiments with a difficult approach. And they are themselves instructive: they urge the importance of borrowing from psychology only basic quite noncontroversial conceptions, leaving lesser or newer ones to be used only when their applicability in a particular context is subject to test. It should then be possible, by virtue of severe abstemiousness, to make the marriage of psychology and economics one in which troth is pledged for better only. For better, certainly, is the utilization by economists of the skills of psychologists in framing and carrying out studies and in eliciting outside cooperation when this is required. For better, most clearly, is Katona's basic notion, the implications of which he demonstrates so forcibly, that man's perceptions, attitudes and structuring of external reality are a prism through which the light of economic fact must pass before it activates response. This notion must deepen and broaden economic work wherever it penetrates.

RUTH P. MACK

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L'objet de l'économie politique. By HENRI GUITTON. With *Observations* of Léon Dupriez and Francesco Vito. Bilans de la Connaissance Économique, Vol. II. (Paris: Lib. Marcel Rivière et Cie. 1951. Pp. 200. 450 fr.)

The amorphous philosophical discontent about the scope, rôle and nature of political economy has not yet called forth much writing in the Anglo-Saxon countries. Elsewhere the situation is different, and this volume is an excellent representation of what might loosely be called the economic viewpoint of a certain section of continental Europe. Most economists will find it difficult to understand many of the concepts in their application to political economy, *e.g.*, *science morale*. Much less will they sympathize with them. This should not be enough to condemn the book, for the problems of ethics, morality, and the ultimate ends of man have always occupied political economists even though they usually exclude this speculation from their economic writings.

The title of this book has been rendered elsewhere as *The Object of Political Economy*. This is misleading. Since the French word *"objet"* is so rich in meaning it is only fair to the authors to note their connotation of

"subject matter" or, in German, *"Gegenstand"* or *"Inhalt."* The heart of the book is an interesting discussion of about one hundred pages, quite in line with the title, by Professor Guitton of the Faculty of Law of the University of Dijon.

After a brief introduction the first section is devoted to a rather critical review of various conceptions of political economy, dominated by what the author calls the image of the physical sciences. Writers in this vein, like Fisher, Nogaro, Pareto, Marshall and Weiser, are generally held to feel that political economy is like the other sciences, *"amorale, générale, indifférente."*

In the second section and conclusion, Guitton sketches his conception of the new and developing concepts in this field. Very briefly, the new science of economics will be one of the first *"sciences supérieures"* which will work out its own new techniques and become practically a new type of knowledge. His attempt is one of synthesis that will aid this development leading to a new human science of action. This is not held to be entirely in opposition to the older conception because writers often have expressions of both ideas in their works. It is maintained that perhaps our most urgent task is that of developing our science to be better adapted to the present and future. Unfortunately, despite the forcefulness of the plea for such a science, not much is said about how it could be achieved.

Both Dupriez and Vito agree in the main with Guitton. Dupriez, professor at the University of Louvain, emphasizes three questions: the rôle of rationality in economic activity, the value of certain analogies, and the normative character of economics. One of his conclusions suggests the viewpoint of the welfare economists—we must judge economic activity increasingly from the point of view of the group rather than from that of the individual. He goes further than most of them when he speaks of *"l'intervention politique."*

Professor Vito, of the Catholic University of the Sacred Heart of Milan, continues the discussion of rationality in economics but in the unusual way of attempting to define what irrational activity might be. He concludes by stating that there are already signs of a transition from *"neutralité"* to *"humanisme."*

The annotated bibliography, a feature of the series, has been expanded in this volume to include articles. This section of more than one hundred items is alone enough to make the book valuable. It includes works in at least five languages representing all important schools of thought.

Professor Guitton has achieved his goal of a synthesis. The success of this achievement can be evaluated only in terms of the value system of the reader. Even those who do not share the opinions of the author will find the book provocative.

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Die Konkurrenz und ihre Fehlentwicklungen, Untersuchungen über die Störungen der Marktwirtschaft. By Burkhardt Röper. (Berlin: Duncker & Humblot. 1952. Pp. 243. DM 14.60.)

This monograph by Röper, a younger member of the faculty of the Univer-

sity of Hamburg, concerns itself with the competitive market economy and its maldevelopments. The exposition is simple, nonmathematical, consciously avoiding much modern refinement, though aware and appreciative of basic modern literature. Monopoly and oligopoly, into which competition shades, are presented in the traditional manner and "dynamized" only by considering long-run population increase and long-run increase in satisfaction of wants through technological progress. Monetary and cyclical changes as well as problems of government intervention are excluded.

The author starts leisurely in the German manner to investigate *"Das Wesen der Konkurrenz"* discussing similarities and dissimilarities of competition and foot races, tracing the origin of the simile dutifully to Cicero who in turn has ascribed it to the Stoic Crysippos. The author ponders whether a comparison with horse races may not be preferable as they depend not only on the skill of the jockey but also on the financial ability to buy the right horse. Pure and perfect competition are defined in the customary manner and the static welfare maximum under competition using the Lerner criteria is shown. A rather general discussion about the relation between model and reality follows.

Maldevelopments—the main topic—are defined as endogenous economic developments which, in a competitive economy with growing population and increasing level-of-want satisfaction, interfere over the long run with the optimum satisfaction of individuals and hence with aggregate welfare. Enumerated and briefly discussed are: excessive price rigidity, excessive price flexibility, delayed cyclical price reaction (cobweb theorem), anomalous price reactions (backwards sloping supply curves); then, loose relations between price and cost, divergence between private and social revenues and costs (external economies and diseconomies), peculiarities of factor supply; finally, structural over- and underdevelopment on the fringes of the public sector and the problems of depletable natural resources and enterprises too small to employ one person fully are discussed. This is followed by some rather inconclusive remarks on income distribution, high distributive cost, and advertising. The concept of ruinous competition, on which the *Reichsgericht* based its appraisal of fairness of cartels over fifty years ago, is justly criticized.

A "realistic" (*wirklichkeitsnahe*) and "dynamic" theory of monopoly and oligopoly is attempted as best fitted to a reality shading from competition into the other market forms. Only the sellers' side is examined, though even moderate realism ought to pay attention to bilateral monopoly and its kin. Essentially, changes in cost and demand over time in regard to profit maximization are considered, though the familiar phenomenon of charging less than the full monopoly price for fear of government or intrusion of newcomers is also treated. "Competitive Monopoly," that is, monopoly which continuously lowers its prices and cost, though not necessarily total profit, is suggested as the prevalent type of industrial monopoly. The phenomenon is due largely to long-range competition from substitutes and long-range fear of newcomers. In the area of oligopoly the prevalence of compromise, not hostility, between sellers is suggested as most likely. Kinked demand curves are used to show the consequences of group discipline.

The author undertakes to analyze long-range changes through a three dimensional graphic presentation. It uses conventional money and quantity axes, and time as a third axis so as to give in depth the changes of demand and cost curves over time. This method of graphic presentation only accentuates, it seems to me, a fundamental weakness of the author's well-intentioned attempt to achieve realism by introducing changes over time. The traditional Marshallian curves do not refer to periods of real time but to partial abstractions from reality in regard to time periods under consideration by the seller. By setting up families of traditional marginal and average cost curves for different time points, not much is achieved. In the sellers' and buyers' minds, momentary short-run and long-run considerations and expectations are present in some undefinable mixture at any moment of time. This makes it impossible to add up, so to speak, simple graphs, in order to achieve greater realism.

The book is an attempt to grapple in a reasoned though hardly original way with competition in relation to the social order (welfare). Many relevant issues are surveyed. Consideration of the concept and requisites of workable competition would have put the discussion on firmer ground; J. M. Clark's classic article is quoted but not adequately considered. It must be surmised nevertheless that the book will be of value to the German reader, though it discusses matters quite familiar in this country. In the present state of the doctrine it should not be held against the author that he has not applied the refinements of modern Anglo-American welfare economics. The time-honored practice of developing *ad hoc* criteria arising from policy suggestions by students of concrete problems—has been recently recommended also by an experienced and representative practitioner of modern welfare doctrine (see M. W. Reder in B. F. Haley, ed., *A Survey of Contemporary Economics*, Vol. II, p. 36).

WALTER FROEHLICH

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A Review of Economic Doctrines 1870-1929. By T. W. HUTCHISON. (Oxford: Oxford University Press. 1953. Pp. xiv, 456. $6.00.)

Mr. Hutchison's present work is indeed a *review* and not an exhaustive treatise. In one volume of 430 pages of text he deals with the contributions to economic science of approximately eighty persons, whose works account for the evolution that took place in economics during this sixty-year period. In most cases the contributions in question are discussed at sufficient length and penetration to convey a clear idea of the essence of their doctrines as well as a perspective on the impact of the latter on the growing corpus of economic knowledge. Yet the work of some writers who become important toward the end of the period—for instance Davenport, Pigou, J. M. Keynes, Bowley, Mitchell, and J. M. Clark—receives very hasty analysis and sometimes only passing mention. This raises a question as to the wisdom of dealing with so many economists in one volume. What the *Review* gains in scope and in

ability to exhibit the rich variety of doctrinal efflorescence that occurred has in some cases been obtained at a sacrifice of desirable intensity of treatment. Yet this may be of minor importance because he refers repeatedly to more extended analyses of most of the economists he mentions, which are now available in the doctrinal and biographical works and essays of such writers as Schumpeter, Keynes, Hayek, Homan, Viner, Marget, and others.

Hutchison's *Review* stands out from other works dealing with the same period in three respects: (i) a certain novelty of expository arrangement, (ii) the attention given, despite space limitations, to several neglected writers of surprising originality, and (iii) the excellence of its "synoptic" text-sections, which yield perspective on the main trends of doctrinal development and on the relations between the several schools of thought of this period.

The *Review* is divided into three parts. Part I, "The Architects of Equilibrium Economics and Their Main Critics," is arranged by individual economists and schools; it occupies about two-thirds of the volume. Here Jevons, Sidgwick, Marshall, Wicksteed, Edgeworth, Hobson, Menger, Wieser, Böhm-Bawerk, Walras, and Pareto receive a chapter apiece. Mangoldt, Schmoller, Wicksell, Cassel, J. B. Clark, Veblen, Newcomb, and Fisher get about half a chapter each, and smaller sections are devoted to Roscher, Knies, Launhardt, Auspitz, Lieben, and Schumpeter. Both Part II, "From 'Static' to 'Dynamic' Analysis," and Part III, "The Economics of Instability and Disturbance" are arranged by topics. Part II records the exegesis Marshallian and Walrasian equilibrium economics underwent in the course of critical scrutiny. The separate chapters are on welfare economics; micro-economics; profits and uncertainty; and interest, money, and macro-economics. Part III has chapters on "Crises and Cycles: before 1900," "Crises and Cycles: from 1900," and "Economists and the Problem of Unemployment in Great Britain, 1885-1929." Parts II and III unavoidably overlap somewhat with Part I because some of the ideas of writers dealt with in Part I are here repeated in summary form and placed in juxtaposition with theories of many additional writers on the topics in question. However, students may find this partial repetition helpful.

Reserving comment on Part I for the moment, this reviewer finds that Parts II and III go over ground that should or will be familiar to students after exposure to chapters on similar subjects in such sources as Stigler's *Production and Distribution Theories*, the American Economic Association volumes *Survey of Contemporary Economics*, Hansen's *Monetary Theory and Fiscal Policy*, his *Business Cycles and National Income*, etc. The advantages of Hutchison's treatment compared with those of the foregoing sources are its greater compactness and the fact that he surveys the work of more writers in tracing each of his topics back to J. S. Mill or beyond and forward into the early 1930's.

In Part I, Hutchison's treatment of his British forebears is generally well balanced and interesting. His discussion of Marshall's work on money, however, leaves something to be desired because it is not clearly linked up with subsequent monetary theory, almost as if Marshall's efforts in this realm

exerted little or no influence on his contemporaries and students. To be sure, in the proper places it is shown that Pigou, Robertson, Keynes, and Hawtrey, etc., were nurtured on Marshallian notions about money. But in the case of Keynes and his *Treatise on Money,* it is also shown—and something similar is implied in the other cases—that he had to break through Marshall's preoccupation with currency reform and turn to Wicksell and others to come to grips with monetary theory proper. This raises the question whether any outstanding economist carried on more directly in Marshall's footsteps. Of course, at least one did, namely Irving Fisher, who acknowledged that his "compensated dollar" proposal for stabilizing prices was an outgrowth of Marshallian ideas by saying that: "the proposal which is here tentatively suggested . . . involves a combination of the tabular standard with the principles of the gold standard" (*The Purchasing Power of Money,* 1922 ed., p. 337). Yet Hutchison ignores this and leaves the reader with the impression (pp. 270; 274; 334-35) that Fisher's monetary work derived from the treatise on "The Societary Circulation" in Newcomb's *Principles*. To be sure there was a strong link between Fisher and Newcomb in the analysis of the quantity theory and in their equations of exchange, but the reviewer submits that there was probably as close a doctrinal link between Fisher and Marshall in matters of monetary policy and reform.

Hutchison's chapters on the Austrians are excellent and comparable with his adept treatment of the British. His fine performance on two schools of such different orientation especially towards economic policy leads one to expect him to explain this difference and to trace it back to its doctrinal origins in Menger's elaborate conception of "the nature of goods" as distinct from that of "claims." Apart from contrasting the value theories of Jevons and Menger, this problem is largely ignored. One can only suggest here that Menger's "goods"-doctrine, which tended to exclude "claims" from economic analysis, was adopted by Böhm-Bawerk, and was later carried over from Austrian capital theory to monetary and fiscal analysis where it hampered progress by basing the latter on barter-economy postulates.

Hutchison's characterization of Wicksell's capital theory—originally a reconstruction of that of Böhm-Bawerk—as ". . . ingenuity . . . largely wasted . . . [on] a blind alley" (p. 234), will not be taken seriously by those who have familiarized themselves with Wicksell's own, final capital-structure concept (*cf. Lectures-I,* pp. 151-65; 202-06, and Appendix 2; and also Lindahl's *Studies in the Theory of Money and Capital,* Part III, which supplements Wicksell's work). Moreover, contrary to Hutchison's impression (p. 234), Wicksell abandoned his vulnerable investment-period quantification of capital for his viable structure concept, and in 1919 he also retracted his earlier objections to Walras' formulation of capital theory (*cf. Lectures-I,* Appendix 1, pp. 236-37 and 226-27 in the order given here).

On the other hand, one can not complain about Mr. Hutchison's competent discussion of Wicksell's monetary theory, although one might wish that more of it had been centered on the later analysis in *Lectures-II* than on that of *Interest and Prices.*

A real virtue of Hutchison's *Review* is that it brings out the contributions of several economists whose works rarely receive mention, to say nothing of the attention they apparently deserve, in standard texts on economic doctrines. As if to make up for this neglect, the author has devoted many hard-to-spare pages to such neglected German and Austrian writers as Mangoldt, Schäffle, Launhardt, Auspitz, and Lieben; to Americans such as Newcomb, Hawley, Crocker, and Johannsen, and to Englishmen such as Sidgwick and Foxwell.

It will probably surprise most readers, as it did the reviewer, to find, for instance, that Mangoldt in the 1860's, when the German historical school was dominant, was a theorist of major caliber with a value theory reminiscent of Marshall's and a monetary analysis foreshadowing that of Wicksell; that Johannsen in 1903 anticipated some of Keynes' work both in *Treatise* and in *General Theory* with his astute analysis of the impact of saving on income and employment and with his multiplier principle; that, in the 1870's and 1880's, Schäffle, Sidgwick, and Foxwell alike were groping for definite criteria for economic policies for steering a "middle course" to higher levels of general welfare by mitigating and removing the evils of unrestricted competition and stemming the greatly feared tide of socialism.

The *Review* opens with a chapter on "political Economy in England After 1870" which describes the condition of orthodox economics on the occasion of the centenary of *The Wealth of Nations*. Few accounts of the culmination and decline of the classical school are more lucid than this. Similar, shorter accounts describe the state of economic thought around 1870 in Germany and Austria, in France, and in the United States.

We do not wish to bring this review to a close without paying tribute to Hutchison as a most scholarly and competent guide to the economics of 1870-1929. His writing, amply documented for the benefit of serious students, shows clearly that he has read and reflected at length on the original works of the many writers he reviews, as well as on the pertinent commentary literature that has sprung up around them through the years. This fully justifies the confidence most readers will place in his judgment when his discussion takes them into unfamiliar territory. His *Review* merits wide and serious reading mainly as an outstanding treatise, not merely "another text."

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A History of Economic Thought. By JOHN FRED BELL. (New York: Ronald Press. 1953. Pp. x, 696. $6.50.)

Professor Bell's work begins with the recognition that "there is a definite need for a volume that provides a unified approach, a manageable organization, and breadth of coverage so that the diverse materials in the history of economic thought may be more easily summarized and integrated" (p. v). In keeping with these objectives, the reader is presented with a volume of unusually broad scope; one notes in particular the completeness of the discussions of the cameralists, the minor American economists of the nineteenth

century, and the nationalists, romantics, and optimists. Unfortunately, the further pursuit of his goals is crippled by the author's reluctance to arrive at systematic generalizations—a reluctance traceable to his feeling that "it is a dangerous and somewhat unprofitable pastime to attempt to classify economists or place them in 'schools' " (p. 658). As a consequence, breadth of coverage is frequently associated with tedious and diffuse treatment, while a meticulous scholarship spends itself in tracing minutiae such as the pedigree of the phrase *laissez faire*, or the literary history of Quesnay's *Tableau*.

In its organization the work follows the conventional chronological plan, beginning with the Bible, the Greeks and Romans, and medieval thought. The emergence of modern economics is found in the mercantilists, the cameralists, and the physiocrats. The major portion of the volume is then divided into parts dealing with classical economics, the critics of classical economics, marginal utility economics, economics in the United States, and concludes with a discussion of "Main Currents of Economic Thought in the Twentieth Century." The central focus around which the evolution of thought is built consists of a thorough treatment of Marshall's *Principles*, from which stems much of the author's position as to the nature and rôle of economics. Yet even here one could ask for a more complete recognition of the limitations of Marshall, especially in the light of recent developments in both aggregative and dynamic economics. Closely related is the social outlook that colors much of the book. Bell asserts that, while capitalism is wasteful, and is characterized by periods of unemployment, "regrettable as this is, it seems preferable to complete surrender to government . . ." (p. 662). This seems a rather overdrawn picture of the alternatives to place before the student.

From a pedagogical standpoint the book, in spite of its encyclopedic character, suffers both from the author's cramped style and the diffuseness of treatment to which his method condemns him. Furthermore, one must note a prevalence of doubtful interpretations and statements of fact, both in the tracing of ideas and in their historical setting. We are informed, for example, that by the last quarter of the eighteenth century "the corporation as a form of doing business . . . was firmly established" (p. 149). The meaning and significance of classical economics is blurred by the author's view that "the economics of Adam Smith and the classical group was largely objective or exchange economics of the market place" (p. 9). On this basis he contrasts the classicists, assumed to be interested primarily in price, with the marginalists, who instead are concerned with value as such. This misconception of the rôle of value in classical economics is broadened into the time-worn comparison of the labor-command and embodied-labor theories of value in the works of Smith, Ricardo, and Malthus, with no clear reference to the contexts in which the theories are used and without which the distinction cannot be illuminated for the student. Marx is dismissed as having "added little or nothing to the broad development of economic thought" (p. 656); presumably the concern of Joan Robinson, Domar and others with Marx is misplaced. In his discussion of Keynes, Bell becomes involved in a confusion as to the

nature of technical "macro-economics," which he first relegates to the abstract status of "a sort of general equilibrium concept," yet almost in the same breath accuses of regarding *laissez faire* as "a completely untrustworthy philosophy" (p. 601). More specifically, "those who went overboard in embracing Keynesian doctrines without qualifications" are charitably invited "to return to the fold of price theorists" (p. 658). One wonders how many would be surprised to find that they had ever left the "fold." Certainly Keynes himself did not regard the *General Theory* as a replacement for price theory.

ROBERT CAMPBELL

The University of Oregon

Fundamentals of Political Economy. By DEAN A. WORCESTER, JR. (New York: Ronald Press. 1953. Pp. xv, 594. $4.50.)

Professor Worcester has written an introductory text for a one-semester course in economics that stresses problems and policy. Believing that "more economics can be absorbed in an introductory course if it begins with what the students already know and are interested in and then works toward unfamiliar and, therefore, unappreciated areas" (p. iii), he has tried to save the unwary student from the pitfalls of rigorous analysis.

The book is divided into five parts. Part I establishes the functions that any economy must discharge and examines them briefly in the context of (1) a centrally administered economy and (2) a market economy. Part II considers the problem of efficient production and contains chapters dealing with the measurement and distribution of income, the effects of government and trade unions on the creation of income, and the utilization of natural resources. Part III is concerned with the problem of stable prices and full employment. Here the author treats international trade, money and banking, fiscal policy, and the business cycle. Part IV is devoted to industrial organization, monopoly, and governmental regulation of business and labor. In Part V the text is concluded with a discussion of progress in terms of population changes and the quest for security.

Students who read this text will brush up against numerous vital and challenging issues: the threat of central planning to democratic values, the comparative merits of private and public health insurance schemes, the problem of price and profit control, the adequacy of governmental policy with respect to the maintenance of full employment, the effect of large-scale industry on the enterprise system, to name but a few. This reviewer has little doubt that the text will quicken the interest of students in these and similar issues, but he is not quite so sure that they will have acquired a sound basis for understanding them. The author has deliberately eschewed a systematic analysis which might have been used to probe the problems he raises. Instead he has chosen to introduce theoretical concepts when he has felt that "what the students already know" is inadequate. Thus in the chapter on Functional Income Distribution, Worcester has felt constrained to introduce the marginal productivity

theory of wages. The theory is illustrated by a neat and simple numerical example, but the blow is still a heavy one. The students have not been prepared in the previous chapters by an explicit treatment of marginalism. Again, in the chapter on Fiscal Policy and Business Activity he has found it appropriate to develop income analysis briefly—the equation of exchange which previously he had been relying upon apparently being inadequate for the issues at point. But in this brief treatment he explains the equilibrium level of income in terms of the equality of planned savings and planned investment, which necessarily involves him in an explanation of the discrepancies in savings and investment, *ex post* and *ex ante*. These concepts are not objectionable—the point is that the student comes upon this obstacle without warning and without having been conditioned to surmount it.

Not only does the piecemeal introduction of theory make it difficult for the student to grasp theory when he does encounter it in the text, but it sometimes leads the author to discuss problems for which there has been inadequate preparation. For example, this reviewer doubts whether the following statement about monopoly will have much meaning to the student who is not acquainted with price theory: "They find monopolies directing resources from more valuable uses into less important uses and holding them there, thus frustrating many consumer wants and making the economic system less flexible and adaptable to changing conditions" (p. 487). Later, in a discussion of the agricultural problem the author refers to the demand for food as being inelastic (p. 546), but there has been no previous discussion of price or income elasticity.

The great virtue of the text is that it is interesting. This is no mean achievement in a day when the typical text has remarkable powers of inducing sleep. Throughout the book Worcester has carried over the theme of Part I and has compared some of the organizational features of the American economy with socialist economic organization. Although this sometimes establishes in the reader's mind an unreal dichotomy between American capitalism and other forms of economic organization, it imparts to the book a freshness of outlook that is most welcome.

Instructors may well find that in the classroom they have to use considerable economic analysis, both price and income, to explain the issues raised in the text. It is to be hoped that in any future revision Worcester will develop a systematic analytical foundation that is suitable for the beginning student. His objectives are excellent. He deplores the tendency of introductory courses to ape the graduate theory sequence. Economists would be grateful if Worcester would solve the continuing and apparently ineluctable problem of the principles course—how to present systematic economic analysis to the student without driving him in despair to the history department.

Karl de Schweinitz, Jr.

Northwestern University

Economic History; National Economies; Economic Development

Economic Aspects of the Second Bank of the United States. By WALTER BUCKINGHAM SMITH. (Cambridge: Harvard University Press. 1953. Pp. 314. $5.00.)

Here is a good study, in which the author may take satisfaction; for which the Committee on Research in Economic History, to the extent of its aid, is to be thanked; and from which readers will get pleasure and profit. Since Catterall wrote fifty years ago, and Dewey more than forty, additional weathering has raised the grain, as it were, of the 'twenties and 'thirties of the last century. At least Professor Smith by his diligent and far-flung inquiries has restored the doings of the Second Bank, and what was done to it, in the whole of its life—from injudicious beginning to stern rescue, serviceable performance, political demolition, and brief, unhappy reincarnation under Pennsylvania auspices. Careful, competent scrutiny has done more than restore the texture of the times, for the fact is that only in the retrospect of more than a century do we discover the meaning of a scene which was confused to the impassioned participants.

We knew the politics of the Bank and of its assailants; we had much of the administrative modes and motives of the institution as contrasted with the ignorance and prejudice of its enemies in states and in national capital. The present author, in re-examining these, has set them against the background of American and international economic developments to give us three dimensions instead of two. Full particulars are furnished along with a talent for summary and a praiseworthy temerity in offering conclusions. It is extraordinary how many times this history supplies comment on subsequent economic and political happenings in our country. The early 'thirties of the last century were a "new era" much like the 'twenties of our own memory. Biddle and his brethren, to their critics, were conspirators under foreign domination, though not precisely in the fashion alleged against architects of New Deal and Fair Deal.

After the Revolution, putting aside the interval of the Confederation, national authority was indispensable. Its uses were questioned, to be sure, but for a decade and more the ends justified the means. Even the Jeffersonians practiced a hold-over Federalism which they could not preach. But by the period of the gentry with whom Smith deals, national power was invoked without discernment. Public virtue, to Jackson and his partisans, must take the form of public violence. Nor were their opponents in the Bank free of this disability. A beneficial blend of individual advantage with national interest was beyond the Democracy of that day. The Treasury was custodial, not creative. Biddle was economically adept, politically unskillful; Jackson was the reverse. The best to be expected was a counterpoise, not a cooperation, of forces. The country extended itself too far and too fast for self-discipline to keep pace. The economy broke down in 1837 and the Constitution was not long behind it.

This book is more than the story of the Second Bank of the United States. It lifts the curtain on the rehearsal for the Civil War. Not that the author

anticipates. The reader has to do that for himself, which makes the work, in its connotations, a valuable aid to understanding American history.

BROADUS MITCHELL

Rutgers University

Economic History of Modern Europe. By HEINRICH E. FRIEDLAENDER and JACOB OSER. (New York: Prentice-Hall. 1953. Pp. xxiv, 611. $6.00.)

Economic History of Modern Europe attempts to present the development of Europe's present-day economic system by surveying the progress made in selected countries. England receives by far the greatest amount of attention, followed by France and Germany. The authors have realized full well the impossibility of presenting a detailed study of the economic developments in all European countries in a volume designed to be used in a one-semester course. It is for that reason that they limit, for the most part, their study to the major western European countries.

The development of Russia receives far too little attention, at least to the mind of the reviewer. Although some major developments in Russia are considered, there is no detailed discussion of the development of this area of Europe. For example, the first five-year plan is no more than surveyed. The remaining Russian five-year plans are not considered, although they certainly portray the changing pattern of Russian development. The turning of Russia to the East and the industrialization of that area is not considered. True, the authors seek to emphasize the western areas, but they have not touched the changed direction and pattern of Russion growth which have caused many changes in the pattern of western development.

In tracing the development of the economy of Europe the study stresses the growth of the capitalistic system. The first section deals with the development of capitalism before 1870; the second, with "a period of mature capitalism that spanned the years 1870-1914" (p. viii); the years after 1914 have been divided according to the two World Wars with the divisions made because "We feel that 'before 1914' and 'after 1919' and 'before 1939' and 'after 1939' are major historical dividing lines like 'before and after the deluge' " (p. viii). The treatment of the several divisions is about equal in length except for the fourth division covering the period from 1939 to the present. This very important section is allocated only some 60 pages. Some advertising of this text has emphasized the case studies of the Marshall and Schuman Plans, yet these plans are only briefly covered with some four pages devoted to each. Again, much has been said about the inclusion of some 130 biographical vignettes on inventors, leaders of industry, and others who have influenced economic development in nations. Some of the sketches are noteworthy; but it is difficult to establish a justification for all, especially when there is so much important material that needs to be covered in a text dealing with European economic development.

Realizing the difficulty of presenting the economic as separate from the political, the authors have tried to interconnect the two by including a summary of the important political happenings in the beginning chapter for each

section. These summaries aid those with some background of political history but seem only to leave others with a very hazy picture of political activity during the period in question.

All major divisions of the economic development of nations are studied, with the emphasis upon agriculture, industry, commerce, transportation and communication, money and banking, and labor organization. These same topics are treated in each chronological division. The development is by countries with the major countries receiving the greatest attention. Where one or more of the smaller countries contributed or advanced a new concept, then that concept is developed. The smaller countries are not included in the main theme of the study but woven in to complete the picture.

Although the chronological periods are slightly different from those usually found in texts of this nature, the material is, of course, much the same. The authors have relied quite heavily upon secondary sources and have contributed little that is original to the study of the economic history of Europe. A bibliography is included at the end of each chapter.

For those desiring a survey text on European economic history with some background political material included, this text may be the answer. It seems best suited to the sophomore level with the instructor supplementing the text material.

John W. Chisholm

Louisiana State University

The Origins and Development of the American Economy. By E. A. J. Johnson and H. E. Krooss. (New York: Prentice Hall. 1953. Pp. x, 420. $3.75.)

This is an extension of Professor Johnson's *Some Origins of the Modern Economic World* (1936). Readers of the earlier work will find it reappearing largely unchanged as Part I of the present work (reviewed in September 1936 by N. S. B. Gras for this *Review,* XXVI, 511).

Major interest now is with Part II, *The Development of the American Economy,* which Professor Krooss has added. This part, roughly the final two-thirds of the book, tells of "the great, benevolent potential of the American economic system" and of how it happened that the American people "have a higher standard of living than that of any other nation." The publishers offer the book in its present form with the hope that it may prove useful as a supplementary text in introductory economics courses. Johnson's earlier work has already demonstrated its usefulness as a simple, clear exposition of the way in which the modern economic world came to be. His method is clearly historical. Kroos considers in greater detail the American phase of this broader development. His method is professedly historical, though the historian might prefer to call it statistical.

Certainly statistical data are present in great profusion—data on national income, per capita income, manufacturing profits from 1817 to 1826, the character of corporation investment in 1950, real wages and money wages 1929-1950, the changing composition of the labor force from 1890-1929, relative farm prices 1860-1950, etc. A complete list would be half as long as the book.

Instructors and some students will find this information useful. However, Krooss may have overestimated the beginning student's tolerance for statistics.

On the other hand, the data offered on some specific matters is sometimes so meager that it may leave the economist, the historian, and even an occasional student wondering just how conclusions in these matters are reached. In part this is due to the almost complete lack of documentation. In greater part it is due to an occasional lack of internal coherence. For instance, his generalization that real wages increased 70 per cent from 1929 to 1950 can hardly be derived from the accompanying figures on weekly and hourly money earnings even when the former, re-expressed in terms of a 1951 dollar, are seen to rise from \$50 to \$65 and the latter from \$1.14 to \$1.60 (p. 236). One wonders too what kind of dollars are involved in his \$180 billion national income for 1950 and whether a per capita increase in income from \$612 in the period 1919-1928 to \$1,200 in 1950 is an accurate measure of "improvement in living standards" (p. 167). Possibly the most misleading use of statistics appears in his discussion of the difficulty in using machinery efficiently on the family-size farm. This, he hints strongly, has led to an enlargement of farm size until in 1945 some 2 per cent of farms included 40 per cent of all farm land (p. 267). He does not mention, and the student can hardly be expected to know, that 83.2 per cent of the land in these large farms was in pasture (*Agriculture Census*, 1945, II, p. 62) and hardly involved the use of any more machinery than a jeep, a fence, and a block of salt.

These deficiencies are perhaps inevitable in a book which attempts to measure so much in so little space. There is much here of value, particularly his data on financial institutions, the expansion of government influence, and the economics of America's wars.

LLOYD R. SORENSON

University of Oregon

Report on Financial and Physical Problems of Development in the Gold Coast. By DUDLEY SEERS and C. R. ROSS. (Accra, Gold Coast: Office of the Government Statistician. 1952. Pp. iii, 172 + 63. 5 *s*.)

This publication is the result of an investigation of building activity in the Gold Coast economy conducted by the authors in the summer of 1951. The report was prepared at the request of, and is addressed to, the Gold Coast government; and though bearing considerable interest for other readers, it should be read with this fact in mind.

The authors are anxious to stress the point that the building industry (which is of importance chiefly because of the predominant rôle it plays in the Gold Coast development plan) can only be adequately understood by first appreciating the place of the industry as one of many interdependent elements within that economy. They therefore begin with a discussion of the economy as a whole, proceed to the problems encountered by a development program, and only then occupy themselves with the characteristics and problems of the building industry itself.

There are two characteristics of the Gold Coast economy which are re-

garded as of particular significance. The first is the importance of a single export crop, cocoa; produced largely by relatively small native farmers, this one item provides from 30 to 40 per cent of the total output of the economy and about three-fourths of all exports. The second feature is the fact that the country finds itself in the almost unique position of having foreign exchange (pounds sterling) available to buy more goods than can be physically brought into the country; and this situation is likely to continue for several more years at least. The bottleneck is that existing port and transport facilities are not capable of handling increased supplies. In addition, some capital goods either cannot be purchased at all in the sterling market or can only be obtained after prolonged waiting periods due to the competing requirements of the Western defense program.

With these facts as a background, there are excellent discussions of the existing commercial organization, of the currency system, of agricultural activity and its responses to changes in price, of the organization of the building industry, of attitudes toward work in the nonagricultural sectors, and other items. The book provides a very informative picture of a backward economy and of the strains and bottlenecks encountered within it upon the initiation of a program of economic advance. The findings, it may be noted, are not always what one is led to expect by more abstract economic theorizing. For example, though labor is "cheap," "as a rough general rule mechanization justified in England is justified in the Gold Coast" (p. 103). This is so because though labor is cheap per day it is expensive per unit of output due to the actual social and economic environment within which it is employed.

Although the report is noteworthy for the realistic manner in which it deals with the Gold Coast economy, in other respects the results are less happy. The analysis is distressingly oversimplified at points; shortages pointed out in one section are on occasion forgotten in seeking solutions to problems subsequently discussed; and there is considerable repetition of a few central points. A particularly annoying example of this last is that, though the lack of sufficient port facilities is pointed out again and again, there is nowhere a discussion of the possibilities which may exist of alleviating this restraint.

In addition to the body of the report, five appendices are included. These are concerned with the construction and use of a set of national accounts for the Gold Coast economy, a study of building costs, and a discussion of various statistical data which should be collected.

CHARLES ROLLINS

Stanford University

Statistics and Econometrics

A Textbook of Econometrics. By LAWRENCE R. KLEIN. (Evanston and White Plains, N.Y.: Row, Peterson and Co. 1953. Pp. ix, 355. $4.50.)

There appears to have been a brisk unsatisfied demand for a textbook that could teach econometrics to, say, seniors and first-year graduate students. There is a well-known inverse Say's Law of publishing, according to which

demand creates its own supply. With a degree of confidence rare in other branches of economic forecasting one could predict that this situation would result in the appearance of several textbooks in this relatively new field. And so it has. To my mind this is easily the best of the lot. It is lucid, teachable (with the right instructor and the right class), covers a lot without trying to cover everything, and, as befits a text in econometrics, tries to pay attention to both the economic and the statistical sides of whatever it is talking about. I think it will corner the market, and deservedly.

The instructor in a course labeled Econometrics faces a major problem before he starts: what shall he assume the students already know? Of course, it doesn't really matter what he assumes; it will turn out in the end that they are completely innocent of mathematics, and have a statistical training which has stressed the deeper advantages and disadvantages of the harmonic mean; some of the students may even be there by mistake, under the impression that econometrics is a novel form of psychotherapy. Klein takes for granted that his students have been through the standard two-year calculus sequence. They are supposed to know about derivatives and integrals. On the other hand they are not supposed to know about probability, statistics, matrices and determinants. But all four of these notions come up again and again in the course of the book. Klein believes he has covered himself by including as Chapter 2, in some 40 pages, a brief summary of probability and statistical inference, and as an Appendix another 20 pages on the elementary properties of matrices and determinants. I fully sympathize with the intent of this device, but I frankly don't think it stands a chance of success. In the first place, his hasty attempt to skim here and dip there leads Klein into casual mistakes; he states on page 51 that the sample mean *always* consistently estimates the population mean, on page 57 that *all* tests of hypotheses are unbiased, and on page 61 that *all* zero-sum, two-person games are determined. But what is much more important, the plain fact is that probability, statistics, and linear algebra are deep and important fields of knowledge. The only way to learn and use their results is to study them seriously. It is idle to believe that anyone who has not done this can understand and appreciate the material in the rest of this book. Actually, only the statistics is really indispensable. The algebra can be circumvented except for the discussion of some computational techniques. But algebra is *useful*, not only here but also elsewhere in economics. A student motivated to learn econometrics ought to be willing to learn first a little mathematics and statistics.

The heart of the book is Chapter 3, which discusses the estimation of aggregative models completely and in detail. Most of the work is carried on in terms of a few particular models of the kind Klein has worked with elsewhere. Simple least squares is handled first. Then the identification problem is introduced and the maximum likelihood and limited information estimates for linear systems are explained. I know of no other place where the student can get such a clear idea of what equation-system methods are all about. In addition a few bits of extra sophistication get tossed in, such as Geary's method of instrumental variates, and the treatment of autocorrelated disturbances.

Taken together with Chapter 4 on computational design, which contains an extraordinarily meticulous treatment of the least squares (Doolittle), maximum likelihood, and limited information computations, this part of the book should equip the reader to perform, let alone understand, analyses of this type. As Klein points out, it is of first importance that students should actually perform econometric research, computations and all.

Chapter 5 is concerned with the treatment of models of the same type, only less aggregative. It is quite possible that in the present state of the art less ambitious studies of single industries or markets are more to the point than the more grandiose schemes. The treatment is again very useful, practical without being excessively mechanical, and illustrated by some of Klein's work on the railroads. The suggestions for "grafting" sector models onto aggregate models are novel and promising, a good thing for graduate students to learn.

Chapter 6 has some material on prediction, some of which is a little formal for the level on which it is pitched but otherwise a good lesson, and a section on input-output models which is much too brief to be useful. The last Chapter, 7, has three sections. One is on models which contain errors of measurement instead of the now more usual shock terms, one per equation. The discussion centers around weighted regression methods, which assume at least the ratios of the error variances to be known. Pedagogically I think this will be most useful as evidence to the student that figures never speak for themselves, and that without assumptions you get no conclusions. It would be well for the instructor to point out what Klein neglects, that with wrong assumptions you get wrong conclusions, and sometimes no warning. A second section is on weighted regressions from sample survey data. This is excellent, but much too brief. I would have liked to see it expanded into a chapter on the full treatment of sample survey data, beginning with some elementary facts about design. There is at least an even chance that here and not in time series are the more fertile fields. The final section takes up the treatment of monthly and quarterly data. I always look eagerly to see what an author has to say about seasonals. Klein comes out very well. He teaches the student only correct things, but unfortunately without bothering to explain why the "classical" methods are no good. The whole last third of the book does not quite maintain the expositional excellence of the rest; there is a noticeable lack of worked examples, for instance. But this is a minor quibble.

I feel a little more strongly about the selection of topics studied. A reader whose whole acquaintance with econometrics came from this text would think that there is nothing to the subject but various applications of linear regression and related techniques. For almost nothing else is covered. Now realistically, pride of place must certainly go to regression techniques. But for students whose outside acquaintance with statistics is meager, a more extensive and less parochial selection would have been fairer and more useful. I have already mentioned that I missed a general discussion of sample surveys. Lorenz curves are merely mentioned, and no other techniques for studying frequency distributions get even that much. The index has no entry under index numbers. This is a narrow view.

I used to think econometrics was the wave of the future; now I am not so sure. It is just possible that the fault lies not in ourselves but in our stars. In any case, where is current research effort best directed? Probably at this stage improvement of the quality of the data, and the development of richer and more realistic economic hypotheses will have higher yields than the further refinement of already top-heavy statistical methods. Even so, high precision is hardly to be expected in this business. But graduate students should be taught what econometric analysis can do; and this is the book they will learn from.

Robert M. Solow

Massachusetts Institute of Technology

Introduction to the Theory of Games. By J. C. C. McKinsey. A Rand Corporation Research Study. (New York: McGraw-Hill. 1952. Pp. x, 371. $6.50.)

This is the first text on the theory of games to appear since the publication of von Neumann and Morgenstern, *Theory of Games and Economic Behavior.* Proofs of the fundamental theorems have been simplified considerably since the latter book appeared, and, in addition, many new results have been obtained. McKinsey has incorporated these developments in his book, and has included a much higher proportion of new results than is usual for textbooks. Whenever there was a choice among methods of proof, McKinsey has chosen the more elementary methods. He seems to have done this without sacrifice of content.

For those with limited mathematical equipment who are interested in acquiring a detailed knowledge of the theory of games, this is an excellent presentation. It demands of the reader a knowledge of calculus (including the notions of convergence, continuity, derivative, integral, minima and maxima), some smattering of matrix algebra and a willingness to follow the arguments closely. The book is written with unusual care and precision, resulting in a clarity of expression for which the reader, particularly the mathematically weak one, will be grateful.

The first six chapters present the theory of zero-sum two-person games where each player has a finite number of strategies. These games are studied in both normal and extensive forms. Chapters 7 through 10 consider zero-sum two-person games where each player has infinitely many strategies. Some mathematics essential for this theory is presented here. These chapters could be omitted without loss by anyone not particularly interested in this special class of games, since all the basic ideas are developed in the chapters dealing with games involving a finite number of strategies.

The chapters on n-person games will be of particular interest to economists. McKinsey presents the von Neumann-Morgenstern theory of n-person games in a very clear way and is careful to point out its shortcomings. He also presents the Nash theory (essentially a generalization to n-person games of the notion of equilibrium originally defined by Cournot for the duopoly

problem), and discusses approaches along other lines. Those interested in following the courses of contemporary mathematical economics will find this material invaluable.

McKinsey makes some attempt (two chapters) to present the formal connections between the theory of games and linear programming, and the theory of games and statistical decision theory. These chapters will be more useful to readers already familiar with the fields.

The clarity of thought, the precision of exposition, and the completeness of coverage of this book make it an excellent introduction to the theory of games.

STANLEY REITER

Stanford University

Business Fluctuations; Prices

Economic Change: Selected Essays in Business Cycles, National Income, and Economic Growth. By SIMON KUZNETS. (New York: W. W. Norton. 1953. Pp. viii, 333. $4.50.)

This is a collection of essays by the distinguished nominee for president of the American Economic Association in 1954. Nine of the eleven essays in this volume have been published previously (two in Spanish), but many are inaccessible to the average reader. They range in scope from almost purely theoretical to eminently empirical (although more technical and more methodological candidates for inclusion were rejected). The coverage indicated by the subtitle represents, "albeit roughly," the sequence of the author's interests.

The volume begins with two essays, dated 1930, attacking the equilibrium concept dominating the English-American tradition in economic theory in the first quarter of the present century. These throw a great deal of light upon the author's development as an economist, largely explaining his subsequent restless concern with dynamic phenomena and with inductive investigation. This provided their greatest interest to the present reviewer, for, read today, they seemed a little commonplace and awkward: much of their constructive content is today more effectively and adequately expressed in other ways. This very fact is, of course, a tribute to those, including Kuznets, who pioneered in the revolution in economics of the two decades which followed.

The third essay, also in some respects obsolete, stands the test of time much better. It is the well-known exposition and criticism of the acceleration principle: "The Relation Between Capital Goods and Finished Products in the Business Cycle" (1934). Although "interaction with the multiplier" is hinted at in a footnote, the essay otherwise considers the acceleration principle standing by itself. Nevertheless, it still deserves study and reflection. Apart from the care and completeness with which the several versions of the acceleration principle are expounded, the essay's criticisms of the principle, and its statistical tests, are very relevant for those seeking to place the accelerator at the

center of their explanation of the cycle. Hicks[1] might well have studied it with care.

What is badly needed today is a comprehensive re-evaluation of the acceleration principle, written with a scope and care comparable to Kuznets'. Until that is done, Kuznets' essay remains essential.

Following a sympathetic yet critical review of Schumpeter's *Business Cycles*, treatment of cycles concludes with a hitherto unpublished essay on "Economic Trends and Business Cycles" (1947), an essentially speculative discussion inspired by Wesley Mitchell's characterization of business cycles as the product of a business enterprise economy. In it Kuznets reveals his identification with the Mitchell concept of the cycle as a congeries of related movements in separable activities—a "unity in diversity." He also reflects the essential reluctance of this school to consider macro-economic relationships. Nevertheless, the essay sparkles with hypotheses for the interpretation of economic history—both trends and cycles.

The sixth essay considers problems of national income comparisons between "industrial" and "pre-industrial" nations. It is an example of Professor Kuznets at his best, full of profound and illuminating appreciation of the nature of economic activity and the problems of its measurement. At once imaginative and practical, it exemplifies the pragmatic ingenuity which pioneered the "invention" of national income accounting, an invention which one writer has characterized as more significant (to victory in the recent war) than that of atomic energy.[2] The major conclusion of the essay, incidentally, is that international comparisons of the sort made by Colin Clark grossly overstate the differences between the per capita national incomes of such countries as the United States and China.

In the course of reaching this conclusion, the author raises very serious doubts in his reader's mind as to the meaning of national income *as a measure of economic welfare*. These doubts are further expanded in the closely related essay which follows, "National Income and Economic Welfare." But, with characteristic optimism, Kuznets concludes only that the current development of national income and product measures needs to be expanded in new dimensions and directions. Unfortunately, most of these new dimensions are ones in which sociological and psychological considerations, and even value judgments, increasingly enter.

The preoccupation with social and cultural factors becomes even more marked in the next and most recent essay, "International Differences in Income Levels (Reflections on Their Causes)" (1950). Here Kuznets considers and successively rejects, as the primary explanation of these differences, population growth, industrial structure, literacy, investment per worker, climate

[1] J. R. Hicks, *A Contribution to the Theory of the Trade Cycle* (Oxford, 1950). To be sure, Hicks' treatment recognizes, and embodies, many of the limitations suggested by Kuznets, including one very significant one which Kuznets fails to consider—the lag between investment decisions and the production of capital goods. The latter, of course, becomes particularly relevant only when the multiplier is thrown into the pot with the accelerator.

[2] J. K. Galbraith, *American Capitalism, The Concept of Countervailing Power* (Boston, 1952), pp. 79-80.

and natural resources, racial characteristics, and national size. Instead, these differences can only be understood in terms of processes of historical development, a development which has required in the industrial countries—and will require in the yet undeveloped countries—a revolution in individual and social attitudes, cultural values, and structures of power.

The further study of economic growth will require intensive development and exploitation of quantitative data. "But the inquiry cannot, and should not, be limited to quantitative data alone. . . . The historical heritage of the several countries as embodied in patterns and values dominating social behavior, their political structure, their attempts, successful and otherwise, to adapt the elements of the industrial system to conditions within their boundaries, would have to be examined. . . . A proper analysis of data of this kind, in conjunction with quantitative data, would impose upon the scholar problems for which the tools of his particular discipline—whether it be economics, political science, sociology, anthropology, statistics—may not be adequate."

The development and broadening of Kuznets' thought over twenty years is at once apparent when we turn to the essay which follows: "Retardation of industrial Growth" (1929). Here Kuznets is considering, in part, the very problem discussed in the previous essay. But social, political, cultural factors barely intrude. Growth is measured statistically. Its explanation lies primarily in technological factors and in "economic conditions in their technical aspect."

The volume closes with two more recent essays. One, written on the eve of war in 1941, speculates as to postwar trends in economic growth. The other, written since the war, reviews in lucid fashion the past trends in U. S. international economic relations, and their possible future directions. From the former we pick up two sentences with which to characterize the author of these essays. "There is no one as revolutionary as a scientist within the narrow field of his specialty, and no one potentially as conservative in the broader field that provides the basic postulates for his specialty." From the earliest to the latest of these essays, the constant challenge which Kuznets has posed to complacent acceptance of established postulates not only in his own field but in all to which it is related displays the exception which proves his rule.

His own work has increasingly exemplified the need of which he speaks: "In the social sciences we have need of a new group of workers who combine the mastery of detailed careful procedures essential to the research scientist with the wider horizon of the historian and social philosopher, and we have need on the part of our specialist groups of greater awareness of the variety of historical experience and mutability of the social framework within which lie the more narrowly defined phenomena that they study."

GARDNER ACKLEY

University of Michigan

Economics in the Public Service. The Intimate Story of the First Six Years of the Employment Act. By E. G. NOURSE. (New York: Harcourt, Brace & Co. 1953. Pp. xi, 511. $6.00.)

This volume is an account of a noble, controversial and surprisingly difficult experiment in the organizing of government for integrated economic

functioning; as seen by one who was a principal participant during the first half of the period covered, and an interested observer during the second half, after his resignation as chairman of the President's Council of Economic Advisers. In Nourse's account, substantive matters of economic policy take second place to the administrative questions involved.

His account falls into three parts. Part I (six chapters) sets forth his philosophy of economic advisership, precedents for such advisership and the developments culminating in the Employment Act—this last feature being completed by Chapter 17, on the intent of Congress in passing the Act. Part II (ten chapters) is a factual narrative of the application of the Act, as objective as the author can make it (but his critical judgments refuse to be wholly concealed). Part III (five chapters) presents his reflections and appraisals, first retracing parts of the narrative in a less objective mood. The book is a mine of information as to the detailed working of this experiment, and an impressive object-lesson in the complications involved, especially in the attempt to utilize professional economic analysis and advice.

First as to the intent behind the Act. There were disagreements over the defining of the objective, and the specifying of compensatory spending as a means. These were resolved by substituting more general for more specific mandates; hence the omissions are peculiarly instructive. The phrase "full employment" was rejected and the word "opportunity" inserted, together with expressions intended to exclude employment of the "leaf-raking" type. Rejected was the explicit concentration on compensatory spending. In practice, so far, fiscal policy has bulked large, but as a means of limiting inflationary pressure rather than remedying insufficient employment, with the result that it appears in a conservative, rather than a radical, rôle.

Eliminated in Conference was a requirement that the Council make available to the Joint Committee all the "studies, reports and recommendations" which it has submitted to the President. This requirement would have made confidential advice by Council to President impossible; but its elimination left the question open, so long as the Council might be called to testify before the Joint Committee.

Omitted also was the proposal that the members of the Council represent different groups in the economy. But the principle, for which Nourse has contended, of bringing "scientific" economics into the picture at the Council level, and of permitting its members to retain an independent and objective professional character, was not actually written into the Act, and was not the intent of all its supporters. The placing of professional economists on the Council stemmed from the inherent logic of its task, not from the clear intent of Congress. This issue of professional objectivity was, of course, the main point on which Nourse split with his two colleagues on the Council, and his attitude begins to show in his opening chapters. He distinguishes economic science and economic engineering. The former, though inexact, may detect and measure departures of actual conditions from an optimum; but devising remedies is a task of engineering or practical policy. Nourse extends the

concept of engineering to the *economic aspect* of the work of the politician, recognizing that he is in addition a leader or salesman, demagogue or statesman or a little of both, and mediator between what is good economic engineering and what will be accepted by the citizens. Nourse says: "Broadly speaking, I think we should have economic scientists in the Council posts and in the staffs of both Council and (joint) committee, economic engineers (of varying degrees of professional competence) in the person of the President and members of the Joint Committee, the real formulators of national policy." To the reviewer, this does not seem fully to fit the fact that the Council, in addition to scientific analyses, is called on to give policy advice, on the level of economic engineering, to politicians who may legitimately overrule or modify it in the light of other considerations pertinent to their more inclusive task. The resulting dilemma seems to have been the real trouble-breeder, ramifying out into a complex of other questions.

Nourse's answer is uncompromising, centering in the statement (p. 417) "The moment a man accepts the President's invitation to become an Economic Adviser (or White House aide), he must either take on a confidential status or become a liability to his chief." This calls for truly great self-abnegation. An economist of high standing must forgo the published work which is the means to further recognition, without receiving in return any assurance that he will have contributed directly to policy decisions, asking merely that his advice shall have been considered before policy decisions are made (Truman, Nourse felt, did not give it such consideration). Even his service of public education would be placed under added limitations which might be rather severe. For such a man, this sounds likely to mean martyrdom, anonymous.

Nourse proposes that the Council issue no separate report of its own, merely appendices to the President's report (for which it will still, presumably, have furnished raw material, coordinated in the light of prior liaison with interested departments and agencies). The Council could also hold conferences with groups outside government, and its members could even give public addresses on safe subjects. Nourse attempts no answer to the question who should sponsor, in Congress, on behalf of the President, a program more comprehensive in scope than any executive department, and presented to an equally comprehensive Joint Congressional Committee. And, to the reviewer, this almost anonymous status appears incompatible with the original idea of Cabinet status and prestige for the Council. Its effectiveness appears to depend on finding out how much economic analysis the President will have time and capacity to assimilate, and giving it to him in corresponding doses (necessarily summaries) while at the same time briefing with more extended analysis the personal advisers (if identifiable) to whom the President will turn for guidance in deciding what weight to give the Council's economic engineering as against broader political considerations.

The antithesis of this anonymous advisership would be the concept of a political ministry without portfolio, charged with developing coordinated policy, which should be economically sound and should fulfill the mandate of the

Act, always subject to the President's approval. They would presumably support, before Congress, a presidential program with which they did not agree 100 per cent, but serious disagreement would call for their resignations. On either basis, Nourse makes it clear that numerous practical problems remain. It is perhaps not surprising that these were not fully foreseen in the setting up of this novel governmental mechanism. But it is taking time to work them out, and in the meantime they can threaten the success of the experiment. They will be points to watch in the fresh start which the new administration has undertaken to make.

Turning from the Council to the Joint Committee, it is not faced with the self-effacement of a confidential adviser, but its members must limit their direct legislative activities, to spend time on an advisory function which has not fully proved its importance (though Nourse cites cases in which he thinks it has been effective). Able and outstanding members have spent a notable amount of time on the Committee's work, and have advanced somewhat beyond the stage of dividing on straight party lines. But problems remain.

In Nourse's final appraisal, the conclusion is that all four main features of the Act—the declaration of national policy, the President's Economic Report, the Council and the Joint Committee—represent steps in the evolution of our governmental structure and function, which will not simply be reversed. Of the four, perhaps the President's Council is on the most insecure basis, for reasons already indicated. Relative to the basic purposes of the Act, the Council's economic philosophy has never been clearly formulated (*cf.* pp. 423-24). The Council has impliedly asked the readers of its reports (of which Nourse gives samples) to have faith that behind its diagnoses lies more definite knowledge than it has chosen to disclose as to what market adjustments are good or bad, and whether good market adjustments are in themselves sufficient to the purposes of the Act. And in the commendation or exhortation addressed to private interests, there is a similar implied faith that these interests know enough to choose socially good and sufficient policies. The reviewer cannot avoid having some faith of the sorts indicated—for instance, that Nourse had definite ideas about the effects of the "Brannan Plan," to which he could not get Truman to listen. But on broader macroeconomic questions, not all doubts are put to rest.

The organization of this book does not make it easy for the reader to distill from it the story Nourse is telling. Part II is divided into subperiods, each treated from the standpoint of the Council, and again from that of the Joint Committee, while Part III retraces part of the story. The result is an effect of repeated flashbacks, confusing the chronology for readers who do not have it so firmly fixed in mind as Nourse himself does. The treatment of particular problems is split into separate pieces, and some bits seem to be lost—for one conspicuous example, the enactment of post-Korea anti-inflation controls, which seem to have bypassed the whole mechanism Nourse is discussing. Is this mechanism so ponderous and time-consuming that any need for prompt action must be met by bypassing it? This is one final question with which the reviewer is left.

In conclusion, Nourse has made an enlightening contribution to American political-economic history. It is to be construed in the light of his known views. He is sure that, on the key points, he was right and those who disagreed with him were wrong. And he has furnished evidence which persons who wish to understand this important experiment cannot afford to ignore.

J. M. CLARK

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La fin de l'inflation. By JEAN GABILLARD. (Paris: Sedes [Société d'Édition d'Enseignement Supérieur]. 1952. Pp. xxxvi, 359.)

Why and how do inflations end? This is a neglected aspect of economic study. Most theoretical treatments of open inflation view it as a cumulative process, proceeding indefinitely until brought under control by forces outside the private economy—credit restriction, currency reform, price and wage control, etc. M. Gabillard's dissertation breaks with this convention. Impressively erudite, and drawing freely on both theoretical and descriptive literature in three languages, Gabillard treats inflations as special cases of cyclical boom, generating stability or deflation in much the same way as cyclical booms are believed to generate crises or depressions. In support of this thesis, he limits himself to places and times for which reliable figures are available. His examples, four in number, are the United States in 1920, Germany in 1923, France in 1926, and once again the United States in 1948, but there are frequent references to parallel episodes in the smaller nations of Western and Central Europe. These four cases of course vary widely among themselves—in severity, in interconnection with balance-of-payments problems, in methods of eventual control, and in degree of subsequent deflation; Gabillard is to be commended for restraint in not forcing them into a single mold. Furthermore, since attention is focussed on individual jumps in price levels, this volume yields no light on the more important problem of *secular* inflation, in which successive jumps succeed each other with rapidity sufficient to produce a long-term upward trend.

The heart of Gabillard's thesis is Part III. Among the factors cumulating to reverse the four postwar inflations, he lists the restoration of transport, the recovery of domestic production and export capacity, the filling of "backlogs" of consumer demand and capital investment, the decline of world agricultural and raw material prices from postwar peaks, and the drawing of capital assets from current production and employment to speculation in produced goods, in gold, and in foreign exchange. Much of this is well known, but two points of novelty appealed to this reviewer. One is a theory that abnormal inelasticity of demand tends to shift from foodstuffs to durable goods and then again to speculative inventories as inflation progresses, and that the last-named shift may be used to signal the end of the inflation. The other is a theory relating the duration of inflation to the time period required for mass per capita consumption to return to its real preinflation level. As regards the *political* economy of inflation's end, Gabillard maintains that effective anti-inflationary monetary or fiscal legislation is permitted by the capitalist class only under

conservative governments, which will safeguard their war and inflation profits against effective income taxes and capital levies. Schacht in Germany and Poincaré in France emerge from this treatment as hired technicians of a class, rather than public-spirited architects of financial recovery.

Also included, although as a side issue (p. 204 f.), is an excellent brief discussion of "escalation" and its effects. Since it also illustrates certain of Gabillard's methodological positions, I venture a running quotation in home spun translation:

> The location of an inflationary process has great importance for the form of inflationary development. The problems posed by the adoption of wage and salary escalation (*l'échelle mobile des salaires*) make discussion of this sort more realistic. It is as false to say that escalation has *always* an inflationary effect as to say it has *always* a deflationary one. It all depends on the location of the dominant inflationary pressures. If these are localized in the markets for foodstuffs, escalation runs the risk of further reducing the price elasticity of the demand for food; it will then have an inflationary effect on the markets for these products and elsewhere by transmission and propagation. But if, as in present-day France, inflation is above all due to a rise of profits, which are used for speculation in gold, inventories, and foreign exchange, while supplies of consumption goods are adequate, wage increases may reduce inflationary pressure by shifting income and demand from inflationary sectors (speculation) to neutral ones (consumption goods). . . . Of course, completely generalized escalation, if conceivable, would be the surest means of creating a condition of permanent inflation. But we must stress again that it would have to relate to *all* price phenomena, including rents and public finances, and that it would have to render all payments periods homogenous, so that none could benefit from any time lags. But whenever escalation is partial, it tends to be inflationary in so far as it benefits the economic class or group which dominates the inflation, and deflationary in the contrary case.

The first section of Gabillard's book is methodological, the second historical. Neither is as closely integrated with the third, or analytical, section as it might have been. Indeed, the two parts combine to furnish a scholarly pseudosubstructure for the largely unrelated conclusions which follow. Nevertheless, they are interesting in themselves. Gabillard objects (with good reason) to both the monetary and the income theories of inflation as overaggregated, and overlooking important features of the inflationary process. He favors an approach through stages in time and through sectoral price movements, and develops a tabular and graphical structure which he applies to the four inflations under consideration. The structure and its methodology might serve as a French translation of the Burns-Mitchell-National Bureau structure of business cycle analysis, applied to the allied problem of inflation, and subject to similar criticisms. They produce imposing edifices which may lead to conclusions incommensurate in importance with the apparatus itself, or (as here) largely unrelated to the technical impedimenta.

M. Bronfenbrenner

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Business Finance; Investments and Security Markets; Insurance

Investments. By Julius Grodinsky. (New York: Ronald Press. 1953. Pp. xii, 567. $6.00.)

This volume differs from most of the recent textbooks on investment in the strength of its emphasis on the theme "that the dynamic and expansive growth of the national economy is the primary source of investment value" and "that an expanding company, in an expanding industry, in an expanding economy is the touchstone of investment success." While other authors as well as experienced investors generally recognize the underlying logic of this point of view, and in fact espouse it to varying degrees, it is fair to say they in general seem to have more reservations than Professor Grodinsky as to its successful practical application to the average investor's problems. Moreover, many of them would probably be unwilling to make, with Professor Grodinsky, the flat assumption of a continuously expanding economy subject only to temporary cyclical interruptions. The possibility of a stagnant or declining economy, with attendant social and political changes, may not appear to exist for the visible future, but a conservative investment program must at least give it some consideration. In addition, analysis should be devoted to the investment implications of the renewed monetary inflation which present fiscal theories call for should adverse economic trends develop.

The content of the book is broad. Part I discusses briefly principles and objectives and the source of economic values. Part II devotes 45 pages to "Appraisal of the Industry." This is excellent material, well presented, on the growth and decline of industries and the consequences for investors. Part III, "Appraisal of the Company" is the largest segment of the book, 196 pages. It is a well-rounded discussion of the usual factors such as competitive position, financial structure, ratios, profit margin, public regulation, and management. Special emphasis is placed on management. An interesting chapter is included on the quality of corporate income. Part IV discusses public obligations. Part V devotes 155 pages to "Money and Markets," including a good discussion of yields and price-earnings ratios. A surprising feature of this section for a text stressing the fundamental importance of long-range growth is an unusually extensive consideration of market analysis and the various analytical and forecasting services. Even the venerable Dow theory is given six pages. One chapter in this section discusses portfolio management, with much space devoted to dollar averaging and formula plans. Part VI presents two chapters on institutional investments. Each chapter is followed by questions and problems, with lists of readings.

Grodinsky's book is descriptive rather than analytical, with a wide range of comment and numerous illustrations drawn from recent experience. The material is presented in an interesting manner, although some of it seems poorly integrated. Some confusion attends shifts in the point of view, as in the chapter on U.S. government securities, which is mainly a review of recent debt management policies and is written from the point of view of the Treasury rather than the investor. Why a rather complicated two-page table analyzing

investment policies and capital ratios of country banks should be put in the middle of Chapter 1 is not clear. Neither is the reason evident for inserting a chapter on preferred stocks between one on financial structure and one on financial ratios.

Despite his primary interest in common stock investment in growth companies, the author has made a strong effort to present fairly all sides of the more controversial points of policy, and in general is successful. Some slips are inevitable. One occurs in several questionable generalizations about bank portfolio policy which give the impression that investment in long-term U.S. government bonds is generally accepted as proper for commercial banks. A minor correction in the same area is that the Treasury's recently introduced tax anticipation bills were not bought initially by the commercial banks "due to the attractive yield" but because the Treasury offered the banks a bonus through permitting them to pay for the bills with credits on their own books.

To this reviewer's taste, two weaknesses of the book as a general text appear to be an unduly brief treatment of investment programs and policies and an unduly extended consideration of stock market analysis. The former would seem to leave too much of a gap between the principles laid down and their practical application, while the latter may too firmly implant some potentially hazardous ideas. Nevertheless, the book is well written, is strong in certain important respects, and merits a place on the investor's shelf.

DOUGLAS R. FULLER

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Public Finance

The Trend of Government Activity in the United States since 1900. By SOLOMON FABRICANT, assisted by ROBERT E. LIPSEY. (New York: National Bureau of Economic Research. 1953. Pp. xix, 267. $4.00.)

Here are the facts; interpret them as you will. With admirable objectivity and detachment, this book presents the fully documented evidence of the growth of government activity during the first half of this century. There are 28 tables and 16 charts in the main body of the book along with 39 tables in the appendices. The accompanying text, largely descriptive of the data therein presented, is appropriately limited. Although isolated individual series are of necessity based on somewhat flimsy original source data, there should be no quibbling concerning the general validity of the results. The possible margins of error are eclipsed by the sheer weight of the evidence. It may be predicted that this book rapidly will become one of the most widely cited sources for more interpretative, and less objective, discussions of the problem of governmental growth.

In spite of the rather widespread recognition of this growth, it will prove shocking to some, and revealing to all, to discover, among other things, that one out of every eight employed persons works for government compared with one out of twenty-four in 1900, that one-fifth of the nation's capital assets

are government-owned whereas only one fifteenth were so owned in 1902, and that the physical volume of goods and services purchased by government increased by more than a thousand per cent over the half-century. The author concentrates on the growth in real inputs used by government. This enables a more accurate comparison to be made between government and nongovernment activity. The growth in government expenditures, the series more frequently employed, is shown to overstate the real growth in the government's use of economic resources. The proper note of caution is not excluded, however; for many purposes the growth in real inputs, or even the growth in expenditures, tends to understate the increasing impact of government on the nation's economy.

Several of the more popularly held views concerning the growth of government activity are refuted effectively. The trend toward bigger government did not suddenly begin in the 1930's; it was well established from the beginning of the century. The car was already rolling downhill; the New Deal merely started the motor. Governments do not do many things now that they did not do in 1900; they simply do a great deal more of everything. The increase in government activity has not been exclusively at the central government level. Although the relative growth of the central government has tended to overshadow that of the subordinate units, the latter have grown substantially in absolute terms over the period.

There are some interesting speculations on the possible changes in the productivity of government. Has the increasing degree of specialization which has been made possible by larger scale operation more than offset the diseconomies of bigness and the declining hours of work? This question is tentatively answered in the affirmative, although it appears that a sharper distinction between the central and subordinate units could have been introduced.

Perhaps the most interesting chapter contains a discussion of interstate differences in state and local activity. Having forty-eight units to work with, a great deal more is done statistically with the state and local employment and expenditure data than with federal data. Interstate differences in per capita expenditure are correlated with income, urbanization, and population density, and these three factors are found to explain 70 per cent of the variance. Income is shown to exert by far the most important influence. This is, of course, what might have been expected, but the supporting evidence is useful. Income, urbanization, and density elasticities are computed for the various state and local functions. It is unfortunate that the most recent state-local financial data available in the compilation of these results were for the year 1942.

The questions which emerge from all this but which are not, indeed could not be, decisively answered are the following: Is the growth in government largely to be explained as a concomitant of the general development of the economy? Or does government follow inevitably the Wagnerian law of ever-increasing relative importance? Or does historical accident represented by the two wars account for the phenomenon? Or must the growth finally be explained by a fundamental shifting of values, by the swing of the social pendulum away

from the individualism of the nineteenth century to the new statism of the twentieth? There is much to support the economic development hypothesis which is tentatively advanced in this book. One bit of evidence is presented, however, which seems to support strongly Adolph Wagner's hypothesis. This is the rather startling fact that the performance of every major function at every level of government has increased. The mere listing of the few minor functions which have declined indicates their scarcity as well as their unimportance: booths for foot patrolmen, regulation of midwives, bounties on coyotes. Does not this suggest that there may be some sort of built-in irreversibility of public activity under representative government? If increasing government activity were largely due to economic development, would not declining sectors of the public economy have appeared?

All of the explanations for government growth are, of course, partly correct, and no one is adequate in itself. The relative importance attached to each will determine each individual's projections of the trend over the next half-century. The author of this book wisely refrains from making any specific projections of this sort.

J. M. BUCHANAN

Florida State University

The Federal Debt: Structure and Impact. By CHARLES CORTEZ ABBOTT. With policy recommendations by the Committee on the Federal Debt. (New York: Twentieth Century Fund. 1953. Pp. xvii, 278. $4.00.)

Professor Abbott has prepared a timely study on the federal debt—timely because the new administration has created the expectancy that something new and better in the art of debt management will be forthcoming. Abbott's study is designed more as background material than as a blueprint for debt management; the policy recommendations are supplied by a Twentieth Century Fund Committee.[1] This division of labor is not a notable success.

The main study is divided into two parts called the "Development of the Problem," and the "Analysis of the Problem." Abbott stresses the importance of the problem but neglects to explain clearly to his readers what the problem is conceived to be. In his last chapter, he gives some hints by asking the question, "Is a politically controlled money market compatible with the free market process?" (p. 188). Read in the context, Abbott's question seems to concern whether monetary controls can do their work in a setting of a large national debt. Events have already partly answered this question. A study of England's experience after World War I might also have helped. The United States is not the first country to emerge from a war with a large national debt. In any case, Abbott offers no solution; he is content to hand over the "problem" to politicians. But I have no confidence that I interpret Abbott's remarks correctly.

Part I of the study is a review of postwar experience with the federal debt

[1] The Committee consists of the following: Arthur R. Upgren, chairman, Henry H. Heiman, Neil H. Jacoby, E. B. MacNaughton, Earl B. Schwulst, Louis Stulberg, and Donald B. Woodward.

including backward glances to prewar and wartime developments. The change in the ownership of the debt, the pattern of rates, and characteristics such as maturity of various types of debt instruments are discussed on broad lines. Close attention is given to the Federal Reserve-Treasury differences after Korea with appropriate quotations from the participants. Abbott keeps his own views in the background, letting the events, where possible, speak for themselves.

Part II is a more detailed discussion of matters considered earlier. The data on the ownership of the debt are carefully presented in some detail by the classes given in the Treasury Survey of Ownership. The minimum holdings of each group are noted, and these are viewed as evidence of the firm demand for government debt by each class. Holdings in excess of these minimums are viewed as sensitive to the varying economic circumstances of debt holders.

His discussion of the effects of debt sales and retirements has the merit of being definite. Treasury repayment of Federal Reserve Bank holdings is regarded as deflationary, repayment of commercial bank holdings as deflationary or neutral, repayment of nonbank holdings as presumably neutral. Treasury sales of debt have opposite effects. In adopting this position, Abbott has illustrious company; nevertheless, the analysis seems incorrect. A repayment by the Treasury of debt held by the Reserve Banks is not deflationary; such a transaction is irrelevant to private expenditures. The Treasury has a smaller balance and the Reserve Banks have smaller assets. Treasury repayment of debt held by commercial banks is either inflationary or neutral—not deflationary. Bank excess reserves rise; hence lending power rises. Treasury repayment of debt with federal funds has exactly the same monetary effects as Federal Reserve purchases of government securities. Obviously what Abbott and others must have in mind are the joint effects of both cash surplus and an equal debt retirement or a deficit and an equal debt increase. It is of course perfectly proper to consider these effects together, but there is little justification for attributing the effects of both fiscal and debt operations to debt operations alone. Although the type of error which this procedure invites has been pointed out by Henry Simons, Abba Lerner, Charles O. Hardy, and many others, there appears to be some mental block in our officialdom as well as among financial students, including Abbott, which prevents them from recognizing the elementary fact that debt retirement is an inflationary, not a deflationary, action. Understanding of these points might raise more doubt about the view, endorsed by the Fund's Committee, that debt repayment should concentrate on bank-held debt. The theory that there is something inherently unsound in large holdings of government securities by commercial banks has yet to be demonstrated.

The final chapter consists of the Committee's analysis and recommendations. The Committee recommends budgeting for a surplus (without however advocating higher rates of tax), restoring monetary policy, lengthening debt maturities, coordinating federal lending programs, and transferring the debt from banks to other holders. Yet they acquiesce in an increase in the debt held by banks as the country grows. If inconsistencies are overlooked, many of the

recommendations seem reasonable enough; but they suffer from the lack of a clear statement of what debt management should attempt to accomplish. The Committee seems unduly complacent about the interest expense incident to higher yields; this matter is dismissed by stating that interest is "only 9 per cent of federal expenditures." But, it seems to me, the Treasury should be concerned with economizing on its interest expense. Like other actions of government, the results to be achieved need to be weighed against the costs. These results in case of debt management consist of holding down private expenditures—inducing people to hold debt instead of real things. The debt structure should be manipulated to *maximize the deflationary effect of the debt per dollar of interest payment.* Short-term debt may be too expensive a form of debt on this test even though the yield is lower than on long-term debt. One dollar of long-term bonds may do more "deflationary work" than five dollars of Treasury Bills.

We cannot let the Committee's method of estimating the federal debt go unchallenged. The size of the federal debt is computed to be approximately $505 billion (for June 1951). To obtain this formidable total, the Committee includes unexpended appropriations, Federal Reserve notes, loan guarantees, all government insurance in force, and other unusual items. The concept of debt employed is a peculiar one. The $155 billion included to cover the various insurance programs, for example, is based upon total insurance in force. On the same principle of computing liabilities, all private insurance companies are bankrupt. The present amount of the liability of the government under its life insurance programs is the amount of insurance in force only upon the assumption that all policy holders will die tomorrow. I can find no justification for including Federal Reserve notes in the debt total especially since it is recommended that this "debt" not be retired. Such misinformation about the size of the federal debt may do little harm, but it cannot be said to assist the public in forming sensible opinions about debt management and monetary policy.

The relation between a Committee and an author is a delicate matter. If the arrangement is to be a success, the author should provide some substantial ideas for his Committee to consider and the Committee should not lightly dismiss the author's findings. In the present case, the initial requirement for success is missing.

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Taxation and Incentive. By LADY RHYS-WILLIAMS. (New York: Oxford University Press. 1953. Pp. 188. $3.00.)

The first part of this book consists of an interpretation of British historical and institutional developments over the centuries as they have influenced the basic motivations and incentives affecting the British people. The second part consists of a detailed proposal for a revision of the British tax structure and

social insurance program designed to provide increased incentives to work and savings by a diminished emphasis on progressive taxation. The first of these two parts covers about two-thirds of the volume and is of much greater general interest to non-British readers; it will, therefore, be stressed in this review.

According to the author, the book "represents a plea for the study of the whole question of taxation and incentive and of the underlying problem of how to maintain justice to the individual at the same time as justice to the community . . ." (p. 8). This problem, in the author's judgment, is of vital importance to the British economy because of the degree to which the traditional incentives for hard work and continued saving by private individuals have been weakened or destroyed. This thesis is supported, in the first instance, by a detailed discussion of the motivations for effort affecting the British economy.

The author classifies incentives into those based on fear and those based on hope of gain. In the former category she distinguishes the fear of punishment, the fear of want (or poverty), and the fear of loss. For the mass of the working population she regards the fear of poverty as the chief incentive to labor, even in the modern welfare state. She points out, however, that "the principal aim of the present century has been to put an end to want" (p. 14), thereby weakening this incentive.

The author regards the fear of the loss of position and privileges as the real incentive affecting the more fortunate classes, those not in immediate danger of actual poverty. She points out that developments during the last generation or so have greatly weakened the power of this incentive. The possession of wealth, she claims, no longer is as highly regarded as it was in the past. The prestige of the educated person in society has also diminished, and the attainment of an education is not dependent on the wealth of the parents. In addition, medical services are available to all, and domestic help is not a prerequisite to social status. "When bishops and judges announce publicly that they have to help their wives with the washing-up, there ceases to be any social stigma attached to loss of ability to employ a domestic staff" (p. 18). All in all, "The penalties for lack of success, and equally for lack of effort to succeed, which attach to the middle classes today are thus as much reduced as those which attach to the poorer sections of the community . . ." (p. 19).

The decline in the power of these incentives based on fear has placed added importance on the incentives based on gain, if the deterioration in the desire to work hard and to save, now evident in Britain, is to be checked or reversed. Unfortunately, however, public policy in Britain has also tended to erode these incentives. "The virtual impossibility of accumulating capital, or of making large-scale provision of wealth for future generations, or even for the saver's own immediate future, without losing through taxation and inflation the greater part of the money saved is naturally the most potent of the present forms of discouragement of effort based on the desire for gain" (p. 22). These effects have been compounded by the prevailing system of rationing

scarce goods which means that the acquisition of money does not result in the early possession of goods or benefits accrued.

Partly as a means of restoring incentives and partly in order to accomplish other objectives, one of which is to improve the equity of the tax structure, the author argues for a sweeping revision of the British tax structure and the existing program of social insurance fees and benefits. She describes her proposal in the following terms (p. 128):

> It consists in a merger between the income tax and the social insurance systems, as a result of which all contributions would in future be made in the form of income tax [with proportional rates and no exemptions] payable upon all the income of the individual whether earned or unearned. In compensation for the loss of the present allowances of untaxed income there would be granted weekly cash allowances, payable to every individual, on the lines of the present children's allowances. These would be in substitution for all (or part) of the present insurance benefits.

The author would limit to the nonwelfare portions of the national budget the use of supplementary income taxation, and even for this portion of the budget she approves only grudgingly the principle of progressive taxation. She states (p. 66):

> . . . the purpose of redistributing income for social purposes is not an object with a moral validity of its own. It requires national emergency to sanction it, and it cannot, without disaster, form part of a permanent system of taxation. The robbery of one group of citizens by another, even when the State, democratically controlled by the first group, acts as its agent in carrying out the theft, remains—theft.

Space limitations preclude a more detailed summary of the author's thesis and of the rationale behind it. A critical evaluation of the volume is extremely difficult for an American reviewer not familiar with the British scene. These difficulties are increased by the fact that the author herself presents essentially a summary statement of her own views and conclusions rather than a full discussion of the factual evidence underlying these conclusions.

In general, the views expressed on work and savings incentives in Britain sound persuasive and consistent with those expressed by others. The standards of tax equity applied by the author, however, appear much more arbitrary, and probably would not be widely accepted either in this country or in Britain. Likewise, the author's excursions into side questions, such as her discussion of the international factors which affect British taxation policy, contain judgments which this reviewer believes to be of questionable validity.

Perhaps the most interesting feature of the book for American readers is the contrast between Lady Rhys-Williams' view on the British incentives and the evidence as to work and savings incentives in this country. Studies of the American scene indicate that no such deterioration has occurred as Lady Rhys-Williams believes to have taken place in Britain.

J. Keith Butters

Harvard University

The Taxation of Corporate Income in Canada. By J. RICHARDS PETRIE. (Toronto: University of Toronto Press. 1952. Pp. xviii, 380. $7.50.)

Dr. Petrie's study is one of a series of volumes on taxation in Canada, sponsored by the Canadian Tax Foundation. After an introductory chapter in which the author makes it clear that taxation, in his view, is an improper instrument for social and economic control and presents the major conclusions drawn from his analysis of the corporate income tax, there is an interesting and informative review of the history and development of the application of this tax in Canada. Succeeding chapters deal with the rationale of the taxation of corporate income, its incidence and economic effects, problems related to the treatment of business losses and the valuation of assets, and the integration of the corporate and personal income taxes. Petrie concludes with a description and evaluation of Canada's efforts to restrain inflation in part through the use of deferred depreciation of new nondefense-related private investment.

Petrie agrees with the "traditional" view that a business profits tax, since it "does not enter as a cost of production in any usual sense of the word" (p. 128), is not shifted. Unfortunately much of the supporting reasoning is based on the concept of the "marginal firm" and its rôle in the market, rather than upon marginal output. The statement made in the course of the analysis that, "If, during a given period, demand and costs remain constant, the only factor that can change price is a change in supply" (p. 126), leaves one wondering about the nature of a supply schedule that is capable of shifting independently of costs!

There is, apparently, some uneasiness in the author's mind at this point, for he suggests, quite without explicit reference to oligopoly or administered prices, that "In a strong sellers' market the tax is undoubtedly shifted in many cases" (p. 143). Thus if there is excess demand at the prevailing price, that price may rise. But it does not follow that this will occur only if the corporate income tax rate is raised; even if the rise in the tax rate is a necessary condition for the price increase, this does not necessarily constitute "shifting" in any really meaningful sense.

A wide range of topics is discussed under the heading of economic effects. These include the problem of double taxation and the effects of the corporate income tax on saving and investment, distribution of earnings, corporate financing, the choice of business organization, prices in the long run, and small business and new enterprises. Only occasionally are definitive conclusions drawn, for the data required for adequate analysis are generally not available.

There is, however, one conclusion that must be seriously questioned. Petrie cites data for the years 1938 to 1950 to "prove" that the higher the effective tax rate, the higher will be the proportion of corporate profits after taxes that will be retained (p. 162). This reviewer found the coefficient of correlation between the tax rate and the percentage of after-tax profits retained to be significant and equal to .61. But the examination of the data (p. 160) reveals that the percentage of profits retained also tends to vary closely with the *amount* of profits after taxes. The latter continued to increase as tax rates

were raised, resulting in what appears to be covariance rather than correlation between tax rates and corporate retentions. The data reveal too that while undistributed profits as a percentage of profits after taxes moved in a direction opposite to that of the tax rate for five of the thirteen years, it changed in the same direction as the amount of profits after tax in all but three of those years.

In the absence of graduated rates the problem of averaging for corporate income tax purposes is relatively simple and, in Petrie's view, should be solved by permitting a limited carry-back and, logically, unlimited carry-forward of losses. In the case of corporations whose shares are actively traded, however, there is much to be said for letting "bygones be bygones," to use Simons' phrase on this point.[1] There is always the prospect that the stockholders in profitable years may not be the ones who owned the shares when the losses were incurred, in which case one must ask what manner of equity this rough averaging achieves.

Petrie believes that methods of inventory valuation and the timing of depreciation properly belong within the jurisdiction of corporate management. Cases of fraud are, of course, the proper concern of the tax administrator, but beyond that there seems little to gain and perhaps much to be lost through the use of bureaucratically established procedures. The argument for basing depreciation charges on replacement costs is well disposed of. Those are charges which are designed solely for the purpose of enabling the historical capital cost of a depreciable asset to be amortized out of income (p. 237). Any other approach is suspect and involves spurious reasoning.

In the interests of equity Petrie is compelled to discuss integration of the corporate and personal income taxes, a problem that is particularly acute in Canada because of the absence of a tax on capital gains. The only complete and logically satisfactory plan would call for elimination of the tax on corporate income as such and the taxing to the shareholder of his aliquot portion of corporate profits. "Practical" difficulties, however, preclude total integration, in the author's view, and thus make it necessary to adopt some compromise plan. After rejecting the various well-known proposals, however, he fails to offer any specific solution, and the reader is left with the impression that a long chapter has accomplished nothing save another reviewing of the pros and cons relating to these proposals.

For the American reader familiar with the general literature on the corporate income tax the most interesting and useful part of the book is the discussion of Canadian practice in this revenue field in Chapter 2 and scatteringly throughout the book. Canada has been willing, particularly in recent years, to adopt innovations which, although they do not always appear to represent wise or equitable procedures, indicate recognition by the government of the principal shortcomings and undesirable effects of the tax and a disposition to alleviate them.

Harvey E. Brazer

Wayne University

[1] H. C. Simons, *Federal Tax Reform* (Chicago, 1950), p. 22.

International Economics

Economic Planning for the Peace. By E. F. PENROSE. (Princeton: Princeton University Press. 1953. Pp. xiv, 384. $7.50.)

One of the unprecedented phenomena of World War II was the scale of the activity that was carried on in Washington, London, and Ottawa in preparing for the peace while the war was still in progress. Before hostilities ceased not only had the Charter of the United Nations been negotiated, but international conferences at Hot Springs, Bretton Woods and Atlantic City had launched or laid the foundations for international cooperation in the fields of agriculture, international monetary and financial affairs, and relief and rehabilitation. By the end of 1945 the proposals on world trade and employment had been put forward, the British loan had been negotiated and large numbers of blueprints existed in various stages of completion for the terms of peace treaties, the treatment of ex-enemy countries and the restoration of liberated countries. Professor Penrose's volume is an account of large segments of these activities between 1941 and early 1947 as seen from London by one who participated in many of them. Its focus is an attempt to determine why and where the effort went awry, especially why despite all the planning, "economic disaster came early in Germany and was narrowly averted in 1947 and 1948 in the rest of Europe" (p. 3).

The search for the answer to this question is the unifying thread which ties together what are otherwise two quite dissimilar parts of the study. The first half of the volume is an account of the planning that went on during the war and is concerned with the long-range plans in the fields of financial and commercial policy, food and agriculture, and commodity policy as well as with the very short-range activities in the field of relief. The second half of the study is mainly concerned with policies toward Germany in the first two post-hostilities years, followed by two chapters on the problems and policies connected with the reconstruction of Western Europe from the Anglo-American loan to the eve of the Marshall Plan. The author was intimately and continuously associated with at least some aspects of all of the facets of postwar policy planning covered in the first half of the volume; apparently his connection with the events after 1945 was less close. It is presumably for this reason that the two parts of the study differ greatly in the mode of treatment of the subject matter. The first part is largely in the nature of personal memoirs and observations whereas the latter half is a more rounded account on the basis of publicly available documents. In these circumstances it is natural that the earlier chapters should be more spotty and less satisfactory as a complete account of the development of policy. It may also be the reason why the second part of the study conforms more consistently than does the first to the impressions of one who saw most of these developments from the Washington end. Nevertheless it is the first part of the volume which, although weak in its treatment and comprehension of the substantive issues, will probably be of the greatest value to the students of postwar economic policy because of the many hitherto unpublished incidents of discussions between American and British

officials which are here recorded. When the account ventures beyond the London scene into an interpretation of contemporaneous developments in Washington the reader will want to keep in mind the author's own warning that this history still remains to be written.

It is now ten years since the first of the international conferences concluded at Hot Springs its efforts to lay the basis for a viable and expanding world economy. Clearly the early realization of the objectives, so bravely stated there and subsequently, has in large measure been frustrated. Is this because unpredictable events have overwhelmed us? Was good planning nullified by failures of execution? Or was the planning itself basically ill-conceived and misdirected? On these, as on a host of extraneous matters ranging from the use of the atomic bomb to problems of negotiating with the Russians, the author's views are expressed with vigor and frequently in highly subjective and controversial terms. The text bristles with expletives such as "extraordinary ignorance," "irresponsible," "careless," etc. In general, it is his conclusion that, especially on the American side, the failures must be ascribed to the planning and to domestic politics.

The main elements in this conclusion may be summarized as follows: (1) There was too much emphasis on the establishment of long-run expansion and equilibrium and not enough on short-run and transitional problems which might necessitate policies quite antithetical to long-run objectives. (2) It was a mistake to separate long-range from short-run functions in international organizations; for example, relief and economic aid should have been administered through the International Monetary Fund and the International Bank and the resources of these institutions made adequate for the purpose. (3) There was insufficient appreciation in Washington of the magnitude of the task of restoring economic health in Europe. (4) Planning was frustrated by perversity and stupidity in Washington, especially in the Congress. (5) With respect to Germany, malice and ill-will in the Treasury and the Pentagon delayed action and almost led to disaster.

There will undoubtedly be a large measure of agreement on many of these conclusions. There will be less agreement on the extremes to which some of these conclusions are pushed and on some of the interpretations and evidence which are supposed to support the findings. This reviewer would be inclined to dispute the second and fourth of the conclusions and particularly to doubt the correctness of many of the interpretations leading to them.

It may have been unwise to separate the needs of relief and reconstruction from longer-range functions in international institutions. Whatever the wisdom, however, the author is quite incorrect in attributing this separation principally to a process of attrition and political compromise. Here as elsewhere throughout the volume, Penrose has a propensity for attributing decisions which were unpalatable to him to the perversity of the Washington political scene, to "political considerations," and to the form of the United States government, "which gives so many opportunities for irresponsible obstruction and consistently weights the scale in favor of conservatism" (p. 46). That interdepartmental coordination left much to be desired and that the

problems of securing Congressional assent were difficult and omnipresent will be confirmed by a host of civil servants. But it should also be recognized, as the author in his impatience does not, that the American people were emotionally ill-prepared for the responsibilities that were being thrust upon them and that the remarkable aspect of the record is that so much was approved, not that some proposals had to be foregone or modified. It is also of interest that what is viewed as obstruction in the United States apparently becomes virtue abroad; one can search the volume in vain for any recognition of the difficulties created by the British government's obsession with full employment policy. Perhaps the author's impatience stems in part from his disagreement with the orientation of American planning toward a freely operating and basically private economy, whereas his own hope for the post-war was an "economic order . . . developing fitfully . . . toward greater cooperation, public control, and public enterprise . . ." (p. 101).

It is also possible to agree that there may have been errors of attempting too much precision in drafting such codes of international economic behavior as the charters of the International Trade Organization and the International Monetary Fund. Simpler and broader rules might have made the codes more flexible and workable. But the study overlooks the fact that the complicated exceptions arose in most cases not from the American side, but as concessions to get as nearly universal acceptance as possible, rather than to create exclusive clubs of a few nations. Whatever the merits of this case, one need not be driven to the author's extreme position that the ideal form of international agreement is to be found in the platitudinous resolutions of the Hot Springs Conference on Food and Agriculture. On that basis agreement is always possible but it is open to grave doubt how significant or effective such agreement is.

As indicated above, the five chapters on the disastrous effects of the Morgenthau Plan on Germany and the internal contradictions of the basic directive to the occupying forces (JCS 1067) are the most satisfactory and comprehensive portion of the volume. Even so, some of the implicit assumptions and conclusions are open to qualification. Many of the policies toward Germany which were designed to prevent that country from again becoming a threat to the peace and to insure that the occupation should not at the outset have the welfare of the German people unduly at heart as compared to the position of the populations of the neighboring liberated countries were shared by many who dissented from the vengeful motives of the Morgenthau Plan. The account seems also to be unaware of Washington studies on reparation policy as early as 1943 which were very similar to those presented by Keynes which are noted in the volume. It is also open to question whether the German policy dealt a severe blow to the willingness of the U.S.S.R. to cooperate with the United States and the United Kingdom.

The general paucity of dates in the text is likely to prove confusing to many readers since events are treated topically rather than chronologically. It will also be regretted that there is no documentation of the major part of the narrative, possibly because most of the underlying documents are still classified in government archives. Without access to documents formerly in his files, the

reviewer is reluctant to cite numerous instances of fact and of interpretation on which his memory differs from the account set down here. Many a civil servant will be bemused, however, by the information that the proposals for an international trade charter had their origins in a memorandum by James Meade in the War Cabinet Secretariat in the latter part of 1942. They may also be astonished to learn that British officials were being informed that the United States was not seriously affected by imperial preferences but that our concern lay with the adverse effect of preferential systems on small and poor countries.

In addition to its other merits, this volume will serve a most useful purpose if it should stimulate the publication of complementary studies from different points of vantage before memories grow dim, since much that was significant was never committed to official paper.

LEROY D. STINEBOWER

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International Trade and Economic Development. By JACOB VINER. Lectures delivered at the National University of Brazil in 1950. (Glencoe, Ill.: The Free Press. 1952. Pp. 154. $2.75.)

The small book contains six lectures which Professor Viner gave at the Getulio Vargas Foundation of the National University of Brazil in the summer of 1950. The subjects of the lectures are, with one exception, in the field in which Professor Viner has made many lasting contributions, *i.e.*, the theory of international trade and the practice of commercial policy. The first lecture, on the classical theory of international trade and present-day problems, is in part a comparison of the world and the world of ideas in which Ricardo and his contemporaries and successors formulated their theorems, and the present where the "cosmopolitan approach" of the classics no longer applies because today the conflict of economic interest between nations is taken for granted, and because economic policy can no longer be considered without express regard for strategic or security implications. This does not, however, invalidate the findings of the classics for their time; but it does call for their "adaptation to the new circumstances if not for outright rejection." The "new circumstances" mentioned are the decline of effective competition, the growth of central planning on a national scale, the establishment of new international institutions, the disappearance of the gold standard, and the increase in trade barriers through quotas, licenses, exchange controls, etc.

The next four lectures explore some of these "new circumstances," partly to deplore their emergence, and partly to show that they are not so important as to invalidate the classical doctrines.

Thus, Chapter 2 is a strong—if not to say, ill-tempered—attack on Metzler's exposition of the "new" theory of international trade in Metzler's chapter in the *Survey of Contemporary Economics*, Vol. I, based on the contentions that (a) the efficacy of the monetary mechanism has been underrated by "the Keynesians"; and (b) "true" price elasticities of demand are not as low as some empirical investigations have suggested. Chapter 3, entitled "Gains

from Foreign Trade," elaborates on the proposition that industrialization is not identical with economic development and that high income and welfare can be derived from agricultural pursuits. The fourth lecture comments on the relationship between monetary and fiscal policies on the one hand, and balance-of-payments problems on the other. It concludes that balance-of-payment pressures are inevitable wherever national economic policies "are designed to produce or inevitably involve inflation" and that under such conditions direct trade controls are likely to be the first and last resort for dealing with balance-of-payments deficits.

Chapter 5 deals with the influence of national economic planning on commercial policy and comes to the (not very startling) conclusion that "every internal direct control which has appreciable indirect influence on the course of foreign trade tends to make necessary a related direct control in the foreign trade field." It also comments on the International Trade Organization charter and the impossibility of devising rational principles governing trade relations between controlled and free countries, on the International Monetary Fund charter and its recognition of the sovereign "right to inflate," and on the difficulty of solving—"when the world at large has ceased to engage in systematic . . . inflation"—the problem of business cycles and their international transmission. In this connection, Viner voices objections against an international code of behavior to be applicable indiscriminately to all countries, and indicates his preference for an "international employment stabilization fund endowed with large resources in national currencies, and with a mandate to use these funds in making loans on a counter-cyclical pattern."

The last chapter, entitled "The Economics of Development," first struggles with the problem of defining the concept of "underdevelopment"—somewhat unnecessarily, it seems to this reviewer—and suggests that the reduction of mass poverty be made a crucial test of the realization of economic development. (I fail to see, however, why Viner believes himself to be in disagreement on this point with "the whole body of literature in the field.") He then lists the obstacles to economic development as (a) low productivity functions—caused by an unfavorable physical environment, illiteracy and low health standards, and lack of technical education; (b) scarcity of capital caused by a low propensity to save, and the limited availability of foreign capital; (c) the hindrances to international trade; and (d) rapid population growth.

The chapter and the book conclude with the rather pessimistic observation that even with the "utmost help from these external factors which there is any reasonable ground to expect," the problem of development will not be solved unless the underdeveloped countries undertake a "sound, large-scale and persistent attack on the basic internal causes of mass poverty."

Viner's lectures are a cornucopia of pertinent observations on a host of issues, although they are somewhat loosely joined together. Nevertheless, this reviewer cannot help expressing his personal regret that Viner has missed the opportunity to make a major contribution to the "economics of development." Most of his remarks and observations are peripheral to the hard core of the practical problems of economic development as they exist nowadays. The

problem of the relationship between economic development endeavors—this sound and persistent attack on mass poverty which Viner wants—and the balance of payments can be put, I believe, very simply; given (a) an agreement that it is in the interest of the world as a whole, or, at any rate, of the free world, that the per capita income of underdeveloped countries should rise at a faster rate than that of advanced countries—in order to bring about a decrease in the difference of per capita income and welfare between countries; (b) the empirically verified, or at least verifiable, fact that the income elasticity of demand for crude materials and foodstuffs which make up the bulk of the exports of underdeveloped countries is unity or less; and (c) the equally verified, or verifiable, fact that the income elasticity of the demand for imported capital and consumer goods in underdeveloped countries is at least unity—the problem arises: what mechanism of adjustment can be made operative, and what policies should be pursued by underdeveloped countries in order to maintain (or obtain) balance-of-payments equilibrium? Is an automatic adjustment possible which will not run counter to stipulation (a)? Unfortunately, Viner did not address himself to this problem and the problems of fiscal, monetary, exchange, and commercial policies which pertain to it.

John H. Adler

International Bank For
Reconstruction and Development

A Geometry of International Trade. By J. E. Meade. (London: George Allen and Unwin, Ltd. New York: Macmillan. 1952. Pp. 112. $5.00.)

This is the latest in a series of monographs that mark Professor Meade's progress in his resolute march through the whole realm of international trade theory and policy. So far Volume I of *The Theory of International Economic Policy* has appeared under the title *The Balance of Payments* (see this *Review*, March 1952), along with a separate Mathematical Supplement. The present work is in the field of international trade proper as defined by classical and neoclassical writers, and is in the nature of a geometrical preface to the promised Volume II of *The Theory of International Economic Policy*.

This is a book for specialists in international trade: it presumes not only some general knowledge of "offer curves and all that," but some fairly sophisticated notions of what is wrong with them.

Allowing for the discontinuity between "no trade" and "some trade," an offer curve with welfare content for a two-country, two-product world can be derived under constant or decreasing costs directly from a family of community-indifference curves. The problem is to do the same thing under increasing costs, where partial rather than complete specialization is the rule, and product quantities vary continuously along a production-opportunity relationship with every variation in trade.

Meade solves this problem with the help of a construction called the "trade-indifference curve." A "production block," representing the production possibilities in one of the trading countries, is allowed to slide along a con-

sumption-indifference curve in such a way that the production and consumption indifference curves maintain tangency, and the axes of the production-indifference curve remain parallel to the corresponding axes of the consumption-indifference map. The trade-indifference curve is traced in the adjoining quadrant by the corner, or "origin end," of the production block. There is, of course, such a trade-indifference curve for each consumption-indifference curve. The slope of the trade-indifference curve at any point is the same as the slope of the "corresponding" consumption-indifference curve at the "corresponding" point, which in turn is equal to the slope of the (tangential) production-indifference curve at the same "corresponding" point. Hence an offer curve may be derived from the trade-indifference map by rotating a price line; the locus of the points of tangency between the price lines and the trade-indifference curves will be the offer curve corresponding to the given cost and preference conditions.

Meade applies the same method, by way of digression, to derive offer curves under constant and decreasing costs, thus subsuming these as special cases. The final results do not differ from standard procedure except that, if we assume partial specialization under decreasing costs (unstable except where due to great disparity in the size of the trading nations), his method shows us some interesting possibilities of multiple equilibrium.

The purpose of the book is explicitly restricted to pure geometrical representation with no attempt to apply the geometry to the solution of economic problems. Nevertheless, the main interest of the book to many readers will lie in its use of the offer curves to represent certain trading situations which, by their very names, are at least reminiscent of major problems in international trade theory and policy. These situations include equilibrium and deficit under free trade; equilibrium under various systems of duties and subsidies; and manipulation to achieve certain welfare goals, nationalist and cosmopolitan.

In addition to its direct contribution to foreign-trade geometry Meade's book supplies a useful diagrammatic background for graduate and advanced undergraduate teaching. The undergraduate, especially, will regard the fifty-one diagrams with misgiving; but, by rigorous selection, six or eight might be chosen as minimum equipment and used with advantage in classroom work.

DONALD B. MARSH

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Instability in Export Markets of Under-Developed Countries. Study prepared by the United Nations Department of Economic Affairs. (New York: Columbia University Press. 1952. Pp. vii, 94. $1.00.)

It has long been known that underdeveloped countries, because of their heavy dependence upon the export of raw materials and upon the import of manufactured goods, are highly sensitive to fluctuations in world markets and are subject to wide swings in their terms of trade. The resulting ups and downs in their balances of payments, which tend to be aggravated by cyclical swings in the inflow of foreign capital, have not only subjected the economies

of underdeveloped countries to substantial fluctuations in incomes, but have also made it exceedingly difficult for them to maintain a steady rate of development expenditures at home.

Although this situation has been commented upon in numerous publications and official reports,[1] few, if any, systematic attempts have as yet been made to measure, in comparative fashion, the magnitude of these balance-of-payments swings. Consequently, this United Nations report fills a long-standing gap in our statistical information. Eschewing analysis or policy recommendations is almost purely statistical; but within its narrowly defined limits it is exhaustive, and will be a useful source of information for specialists in this field.

More specifically, it provides answers, and does so with painstaking thoroughness, to the following questions: How large are fluctuations in prices, volume, and proceeds of exports of underdeveloped countries, classifying these fluctuations as year-to-year, cyclical, and long-term? What is the connection between fluctuations in prices, in volume, and in proceeds? What are the relations, if any, in these countries between variations in export proceeds and capital imports?

As might be expected, the fluctuations are impressive. For 25 representative commodities the within-year price fluctuations over the last half century average close to 27 per cent, the year-to-year close to 14 per cent, the cyclical about 13 per cent per annum, and long-term about 4½ per cent per annum.

A surprising conclusion is that price fluctuations are not the major factor in the instability of export proceeds; on the whole, the volume of exports has fluctuated even more than the price, both in respect to cyclical[2] and long-term variations, averaging close to 19 per cent and 17 per cent respectively. For all types of fluctuations—year-to-year, cyclical, and long-term—export proceeds have wider swings than either those in price or volume alone, indicating that changes in volume do not offset those in price. Indeed, year-to-year fluctuations in volume are often more than twice as high as in price and, therefore, result in instability of export proceeds even when fluctuations in volume and in price are in opposite directions.

The lack of any general relation between the direction of price changes and that of volume changes arises from the grouping together of food and industrial raw materials. Once these groups are separated, we find that food changes in price and volume tend to move in opposite directions, indicating—but uncertainly, as the tendency is weak—the predominance of changes in supply as the causal factor. For industrial raw materials, however, fluctuations in price and volume generally move togther, suggesting that here changes in demand may be the important factor.

[1] Attention might be called in particular to the two well-known studies of the United Nations, *Measures for the Economic Development of Under-Developed Countries* (May 1951,) and *Measures for International Economic Stability* (November 1951).

[2] It might have been well to insert a footnote explaining why, in the trend from which cyclical deviations are measured, a seven-year moving average was used when the price and volume cycles averaged about four years. If the cycles were too irregular for a four-year moving average, might not a mathematical curve have been more suitable?

Since the purpose of the study was to investigate the ability of underdeveloped countries to obtain foreign exchange, it was necessary to obtain data on capital movements and invisible earnings. Before 1939, receipts from long-term gross capital imports averaged about 10 per cent of the value of export receipts. Over the same period invisible earnings averaged between 1 per cent and 3 per cent. In the postwar period invisible earnings increased somewhat because of tourist expenditure, but long-term international investment was generally lower. However, for the half century as a whole, not only did capital movements and invisible earnings fail to compensate for the instability of export proceeds, but they fluctuated more than three times as much as export proceeds and, as might be expected, generally fluctuated in the same direction, thereby aggravating the instability of receipts of foreign exchange.

It is only to be expected that the authors were sometimes handicapped by the absence of certain data, and to that extent they had to trim the statistics to the available material. One wonders if this situation was responsible for comparing the within-year[3] fluctuations for prices only; or for South Africa, New Zealand, and Australia being—surprisingly enough—entered as underdeveloped countries for the first time in the last chapter (which is concerned with a comparison between export proceeds and capital movements), while many of the underdeveloped countries included in previous chapters are now left out. And is it entirely responsible for a succession of tables in which the number of countries, the number of commodities, and to a lesser degree, the number of years are almost invariably different? At any rate, the utmost in attentiveness is required of the reader, whose task is made no easier by the complete absence of any visual representation.

Though it is unfair to criticize a work for not going beyond its explicit terms of inquiry, it is not irrelevant to discuss the usefulness of the inquiry in its present form. We have mentioned the specific questions this report endeavors to answer. It may be doubted, however, if many would think to ask these questions in quite so restricted a manner. The report is assuredly of value when supplemented by some additional data. Standing alone, it falls short of what is necessary to convey a complete picture. For large fluctuations in exports assume importance only as exports become a significant proportion of national income, and of this desideratum there is nothing in the report. A brief comparison, between underdeveloped and other countries, of the magnitude of the export fluctuations, and of the ratio of exports to national income, would have been a useful addition.

Another question in this connection is what is the proportion of the total crop, or of the total output of materials, which is exported by the various countries? Does the proportion exported vary according to the price: for example, will a low price induce producers of some crop to retain a larger part

[3] Within-year fluctuations are not necessarily coincident with seasonal variations. The percentage within-year fluctuation is the difference between the highest and lowest price in the year expressed as a percentage of the highest price (in this study every change is expressed as a percentage of the higher price).

for their own use or consumption, in this way alleviating the hardship occasioned by their reduced money incomes?

Of course, it may well be that in all these countries the proportion of total output exported is large and that exports are a large and constant proportion of national income, and that these facts are known to anyone having a rudimentary acquaintance with underdeveloped countries. Yet it would require little extra labor to have provided data such as these to enable the interested "outsider" to form a more balanced appreciation of the impact on these weaker economies of the strain of large fluctuations.

Though the report engages in hardly any analysis and makes no recommendations, there can be little doubt that the authors are of the opinion that fluctuations are a decided obstacle in the development of these countries. Without opposing this view one can see how the desire to bring these important facts to the attention of the public may have led them, inadvertently, to take occasionally a rather odd position.

For example, in an introductory paragraph we read that: "A degree of fluctuation such as that indicated by this study threatens underdeveloped countries with inflation in both prosperity and depression. During recessions, reduction in export proceeds and balance of payments deficits encourage the devaluation of currencies or restriction of imports; both measures may increase inflationary pressure on prices. Conversely, the money income of exporters may expand so rapidly in times of increased demand that domestic controls become inadequate to prevent inflation. . . ."

Surely this is making the worst of both worlds! If during a recession an import surplus ensues, the result may be an internal deflation. This would be symmetrical with a resulting inflation when the country has an export surplus. On the other hand, if, for argument's sake, we allow the country with an import surplus to devalue its currency (or restrict imports), thereby courting inflation, we must, by the same logic, allow that if it revalues its currency (or removes import restrictions) when the value of exports expands, it exerts a deflationary pressure. There may, of course, be factors which render a symmetrical analysis of this sort inapplicable for many of the underdeveloped countries. If so, it would be more convincing to indicate their nature at this juncture rather than to lean so heavily on the indulgence of the sympathetic reader.

On page 20, after telling us that there were continuous long-term trends ". . . resulting in total changes in commodity prices which were greater than the normal total cyclical amplitude," we meet with the remark "clearly in respect of long-term projects or long-term planning, a steady and persistent adverse long-term trend can be just as destructive of stability as shorter-term fluctuations." Now this opinion, as it stands, is not easily acceptable. The concern with stability *per se* can be taken too far. After all, there is a presumption that the price mechanism has a rôle to fulfil in the economy: and though a good case can be made for reducing short-term fluctuations, it is usually made with a proviso that long-term trends should be allowed to prevail.

The attempt in Chapter 5 to impute the respective contributions of price variation and volume variation to variations in export proceeds may be a

neat way of summarizing the main results of previous chapters, but we must be aware of slipping into unwarranted inferences. To illustrate, on page 62 there is the following paragraph: "Price stabilization alone, without stabilization in volume, would, therefore, have reduced the cyclical instability of proceeds by only ¼. Similarly, stabilization in volume, without price stabilization, would have reduced the cyclical instability of proceeds by only ⅓. In both cases, other things being equal, the major part of existing cyclical instability would have remained in spite of such partial stabilization."

From the observation that partial stabilization is inadequate, we may unthinkingly draw the conclusion that stabilization of both price and volume is required. But in some cases, where changes in supply are largely responsible for fluctuation in export proceeds, stabilization may be effectively increased, not by adding volume stabilization to price stabilization, but by removing price stabilization entirely. This is at once recognizable in the limiting case of an import elasticity of demand equal to unity.

But, after all criticisms have been made—and many of them are really in the nature of a request that the scope of the report be enlarged—anything said, or left unsaid, should not be allowed to detract from what, by any standards, is a solid achievement in applied statistics.

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Ausgleichsgesetze der Amerikanischen Zahlungsbilanz. By JÜRG NIEHANS. (Berne: A. Francke. 1951. Pp. x, 173. Sw. fr. 9.50.)

The author attempts to make general price theory the basis of quantitative forecasting in the field of international economics. In particular, he wants to find some "economic laws" to explain the movements leading to an equilibrium in the U.S. balance of payments. In the first, theoretical, part of his book he defines "equilibrium" and "disequilibrium" in the balance of payments as absence or presence of divergencies between intended and actual international transactions. He divides equilibrating movements into "visible" and "invisible" ones (depending upon the possibility of actual verification in balance of payments statistics), subdividing the "visible" movements into "monetary" and "administrative" ones (depending upon their effects on "freedom" of private international market transactions). Finally, he distinguishes primary, secondary, and tertiary consequences of equilibrating movements. The first category includes effects on prices and quantities of goods and services entering international transactions and depends mainly on the price elasticity of demand for these goods and services. The second includes effects of primary changes on incomes as well as on prices and quantities of other goods and services. The third includes effects of primary and secondary changes on the future decisions of producers and consumers.

In the second, quantitative, part of the book, the author tries to estimate price elasticities for U. S. imports and for U. S. foreign travel expenditures, primarily on the basis of data covering the period from the middle of 1947 to the beginning of 1949. He analyzes 18 commodity groups, which accounted in

1948 for 46 per cent of all U. S. imports, comparing in most cases the volume of imports with the relation between domestic and import prices. He comes to the conclusion that about half of the goods have a short-run elasticity of less than unity, and about one-fourth an elasticity of more than unity while the elasticity of the rest is either unity or indeterminate; however, almost two-thirds of the goods have a long-run elasticity equal to or greater than unity. The author also calculates that foreign travel has an elasticity of more than unity.

Analyzing the relations between imports and exports as well as between imports and national income, and observing the modest rôle of foreign exchange in the U. S. banking system, the author finds that changes in U. S. imports have negligible secondary and very small tertiary consequences. The net effects of changes in U. S. imports are therefore virtually identical with their primary consequences and thus determined by the price elasticity of demand for the affected goods and services. For this reason, the trading partners of the United States can hope to raise their total dollar earnings only by means of selective rather than indiscriminate reductions in the prices of their export goods (or even in U. S. tariff duties). The author advises the European countries to concentrate on technological progress so as to be able to export "newly invented" goods to the United States.

The author performs a useful service by applying good old-fashioned price analysis to the most pressing problem of modern international economic theory and policy, and his conclusions conform to common sense. However, the statistical basis of the study is far too narrow to furnish conclusive evidence for his estimates of price elasticities and thus for the validity of his practical conclusions. Nevertheless, in a world which abounds in facile generalizations on the future of the U. S. balance of payments, it is refreshing to encounter a conscientious attempt to bring the discussion back into the confines of scientific method and quantitative measurement.

J. H. FURTH

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International Economics. By CHARLES P. KINDLEBERGER. (Homewood, Illinois: Richard D. Irwin. 1953. Pp. xx, 543. $6.00.)

This comprehensive work integrates the newer developments in the theory of international trade and finance with standard classical doctrine in so far as the state of our knowledge permits. It employs the analytical approach and consistently applies theoretical tools to the problems of the real world. Descriptive material on bills of exchange, gold standard, etc., has been held to a minimum and the treatment of institutions is shorter than in most textbooks. The style is clear and sprightly, considering the difficult and complex nature of the subject matter.

The organization is excellent. In Part I, the necessary groundwork dealing with balance of payments, foreign exchange markets and elements of the adjustment process are held to 75 pages. Part II covers the heart of foreign trade theory and its application to commercial policy. Part III deals with

capital movements and the process of economic development. Part IV, which is about one-fifth of the book, treats the forces of disequilibrium and the means of adjustment.

The two key chapters, on (1) the price mechanism and classical assumptions and (2) income changes and the multiplier, include 22 diagrams and several tabular illustrations which will facilitate the teaching of these subjects.

In addition to the customary subjects, the tariff chapter deals with the terms of trade, factor returns and redistribution of income. "Trade substitutes for factor movements. Imports reduce the scarcity of the scarce factor; exports lessen the redundancy of the plentiful factor. . . . More than simple redistribution between industries is involved. . . . Labor intensive types of manufacturing—shoes, textiles, pottery, hat bodies, etc.—are the strongest proponents of tariff protection. Large scale manufacturing in mass-production industries, on the other hand, employs a predominance of the abundant factor, capital, and is identified with exports. As capital became more plentiful than land and as the role of agriculture products in exports shrank, large scale manufacturing industry swung from protectionism to export-mindedness, and agriculture from free trade to protection. This explains much of the reversal in United States trade policy" (pp. 200-01).

A chapter on monopolistic discrimination and two chapters on quotas, state trading and exchange controls emphasize the importance of these devices in the world today. Exchange controls against scarce currencies are treated rather fully and Frisch's trade matrix is explained. Under certain conditions, discrimination may reduce total trade less than would proportional reductions in trade. The final chapter of Part II on "The Case for Free Multilateral Trade" brings out the difficulty of putting Humpty-Dumpty together again. "The condition that every country have a balance in its international accounts or reserves large enough to cover its gross deficits in inconvertible currencies has given us an example of the fallacy of composition. Each country has to run the risk of losing a lot—its reserves—in order to achieve a problematical gain-convertibility—which accrues as much or more to others" (p. 280). The discussion is enriched by an all too brief evaluation of the risks of multilateralism in a dynamic world of imperfect markets.

Almost 100 pages are devoted to capital movements, the transfer process, and economic development. The classical explanation of the transfer process is criticized and the modern theory expounded. An effort is made to cope with the intricacies of the terms of trade with the conclusion that something can be said, but not much that is conclusive. The stages of economic development in relation to factor proportions and balance of payments receive the attention that seems to be warranted by interest in the problems of growth.

The last 130 pages (Part IV) are devoted to disequilibria and the means of adjustment. Here Kindleberger breaks new ground in the treatment of structural disequilibrium at the factor level and the spending of inconvertible foreign currencies on higher priced goods. This is only incidental, however, to a full review of the appropriate measures to correct disturbances.

Cyclical disequilibrium may arise from differences (1) in the international timing of business fluctuations, (2) in income elasticities, and (3) in price elasticities. Depreciation, deflation and import controls are each regarded as unsuitable remedies. This leaves short-term lending. But cyclical disequilibria do not balance out over the full cycle. For this reason, secular disturbances must be eliminated before the International Monetary Fund can function effectively (p. 433). With respect to secular unbalance, Kindleberger believes that the International Bank and Point Four may have increased the disequilibrium by encouraging boldness in the ambitions and investment plans of young countries.

In the early stage of national growth, planned domestic investment tends to exceed savings, and imports to exceed exports. Secular disequilibrium will arise because the import surplus tends to exceed the foreign capital available for financing it. With the young creditor nation, planned savings tend to exceed domestic investment and exports to outrun imports. To restore balance, Kindleberger tries out exchange rate adjustment, tariffs and other controls. He concludes that "the major remedies are deflation and borrowing in the young countries; maintenance of income and lending in the developed (p. 451).

Structural disequilibrium is the result of wars, crop failures, changes in techniques, taste, etc. The acute difficulty arises when the standard of living must be reduced. The classical medicine is to avoid inflation and depreciate the exchange rate. But when the dislocations are large and resources are rather immobile, a certain amount of inflation may facilitate the process of shifting resources during the period of adjustment to lower levels of living and investment. Kindleberger believes that the planners' prescription may work in the early and acute stages, but as the relocation of resources gets under way, the liberal prescription is called for. The use of quotas will do much more harm in the case of structural disequilibria than in the case of short-term cyclical disturbances.

Kindleberger has carried the analysis of structural disturbances to the factor level. Labor is likely to be overpriced and capital underpriced. "Balance in the balance of payments may still be possible, but only at the cost of unemployed labor . . . the income generated by the employment of the excess labor would spill over into imports and upset the previous adjustment" (p. 461). The deflationary policy of the Italian government under the European Recovery Program has gone far towards balancing the international accounts, but has left structural unemployment.

Clearly, it is desirable to equalize factor returns within the country, but this is hard to achieve. Political and social as well as economic adjustments are required. The difficulty with the prescription of lower wages and higher interest rates "is likely to be that it will not work" (p. 465). Workers may prefer unemployment and it is by no means clear that business will substitute labor for capital at lower wages and higher interest rates.

In a concise review of the European Recovery Plan, the author correctly points out that circular reasoning is involved in using balance of payments analysis to determine the level of American aid. He finds that the argument

that suppressed inflation must end in open inflation is not supported by the European experience.

The concluding chapter sums up what can be done with the four disequilibria—cyclical, secular, structural goods level and structural factor level. The four means of adjustment are trade restrictions, capital movements, price and income changes. "Trade restrictions are to be avoided, capital movements can be regarded as a way of buying time" (p. 502). This leaves the field chiefly to fiscal policy and depreciation of the exchanges.

At a highly abstract level it would seem that structural disturbances could be handled by price changes and cyclical and secular disturbances by fiscal and monetary policy. Some of the problems are that: (1) One country alone will have difficulty during cyclical and secular disequilibria with fiscal and monetary measures; (2) The cyclical remedy may not work unless the secular disequilibrium has been corrected; (3) The price system may correct structural disequilibrium at the goods level or it may shift resources chiefly to industries producing for domestic consumption. In the last case, depreciation will be needed.

What is most undesirable is inflation balanced by quota restrictions. The conclusion is that there is no one sovereign remedy. The world should work toward the restoration of mobility of resources, revive lending, and maintain fairly stable exchanges. "Cases will still occur in which trade controls are unavoidable."

The author has performed a service in bringing together the old and the new in the field of international economics. The relevance of theory to policy is demonstrated throughout the last half of the book. By infusing the analytical treatment with a fair degree of realism, more questions are raised than can be answered. The important thing is that the tools of analysis are brought to bear on the problems in an orderly way.

The annotated bibliography is extremely useful. Surely this is the way bibliography should be handled in textbooks. The comments are brief but enlightening and stimulate further reading. Graduate students and others who have been unable to keep up in the field will appreciate this feature.

The book, I believe, will be widely welcomed as a text. The only question is whether it is too difficult for undergraduates. The liberal use of diagrams is helpful on this score. The work probably covers too much ground for a one-semester course, but there should be no difficulty in omitting certain chapters.

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D. D. Humphrey

International Economic Organizations. By C. H. Alexandrowicz. Published under the auspices of the London Institute of World Affairs. (New York: Frederick A. Praeger. 1953. Pp. xii, 263. $6.00.)

Although some of the present international economic organizations originated in the last century, *e.g.*, the International Telecommunication Union and the Universal Postal Union, their proliferation became most evident during the past decade. Professor Alexandrowicz' study attempts a summary of

their internal administrative structures, as well as their main economic objectives and achievements. That this is no easy task to compress into less than 300 pages can be seen from his list of abbreviations, covering some forty agencies, both worldwide and regional. Paticular attention is given to the gold standard and international cartels, representative of privately initiated international organization; quasi-public groups such as the International Co-operative Alliance, the International Chamber of Commerce, and the Bank for International Settlements; and the Bretton Woods agencies, the International Trade Organization (never ratified), the International Labour Organization, and the U.N. Economic and Social Council, international organizations at the government level.

Because of space limitations, the descriptions are hardly more than summaries, with many necessary qualifying remarks omitted. Hence the reader should be fairly well informed about the general economic background during the past 75 years in order to comprehend and assess the author's judgments, such as those about the gold standard mechanism. Otherwise he may get a somewhat distorted picture; the International Monetary Fund, for example, is made to appear in too unfavorable a light.

The order in which the agencies are treated emphasizes two themes: the gradual development of the tendency to organize internationally to cope with the emerging economic problems, and the increasing tendency for governments to play a more important rôle as the functions shifted from the technical to the policy-making, private and short-term planning developing into public and longer-term planning. For example, the informal central bank cooperation within the gold standard has given way to the formal representation of Treasury officials on the International Monetary Fund. This frequent use of the pre-1914 gold standard as a yardstick makes one feel that the author's ideal would be a supergovernmental agency run by international civil service experts according to set rules, with the "power politics" departments, such as the Foreign Offices, excluded, since these are too nationally minded.

A characteristic of the period since World War II has been the increased decentralization of functions among many agencies, in contrast to the greater centralization within one, such as the interwar League of Nations, or Lord Keynes' proposed International Clearing Union. Part of this the author attributes to the excessive zeal for new agencies resulting from "an inherent trend towards an expanding international bureaucracy."

Cooperation among nations depends on whether or not isolation can be afforded, or alternatively, whether the administering agency can force compliance through the threat of withdrawal of its services. The coal shortage enabled the European Coal Organization to succeed; the lack of similar effective sanctions has weakened other agencies, *e.g.*, the inadequacy of the International Monetary Fund's resources relative to the size of the dollar shortage. (Under the gold standard the desire to maintain a fairly rigid gold value for the country's currency served as the necessary sanction to keep members "in line.") Hence it would be better not to have any organization than a meaningless and ineffective one, for the lack of any organization would highlight the

fact that the problem involved was still unsettled, so that it might be tackled again at a later, more appropriate time.

The author points out that in aiding underdeveloped areas, some government intervention is needed where private initiative will not step in; but too much may be just as great a hindrance to developmental cooperation as too little. In fact, world community building is hindered whenever there is government intervention, even internally, for its policies as a member of an international organization will be designed to protect its own domestic planning, rather than being aimed at the broader issues.

Unfortunately, the book has many shortcomings, which a carefully edited reissue could overcome. Most serious is the complete omission of the repercussions of the Korean invasion (although unconnected post-Korean developments like the European Payments Union are discussed). For example, the author does not treat the U. S. government's price controversies with the tin and rubber producers in his sections on those commodities. No mention is made of the International Materials Conference.

The organization of the book could be improved considerably, too. Although the emphasis is on the organizational structure of each agency, there are many short asides—often at irrelevant places—on general principles inferred from these individual studies. Greater space than a sentence or two should have been allotted the interwar League-sponsored loans guaranteed by other than the debtor government, and the international trade union movement. Errors in style, such as the use of four different titles for the Export-Import Bank in Chapter 13 (*e.g.*, United States State Bank) should also be corrected, as well as mistakes in several of the descriptions.

Despite these minor defects, the book should serve as a compact introduction to the subject, and as a guide to the reader interested in learning more about the agencies discussed. As the author remarks, "the interest of the international lawyer and of the international economist coincide, as the structure of the organization is particularly essential for the performance of its functions."

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Business Administration

City Milk Distribution. By R. G. BRESSLER, JR. (Cambridge: Harvard University Press. 1952. Pp. xii, 398. $6.00.)

In this exceptionally interesting analysis Bressler evaluates several proposals for improving the efficiency of milk distribution. Since he considers only the movement of fluid milk in bottles or containers from processing plant to consumer, his field of study is fairly narrow. The flow of milk from farm to plant, distribution to consumers through restaurants and other "institutions," and the marketing of other dairy products, all lie outside his subject. Geographically, his field studies have been restricted to Connecticut, so that here

too the area of analysis is narrow. What he has lost in breadth, however, is more than made up by the depth to which he probes.

The general nature of the study is set when he defines efficiency as a ratio between input and output. Given this definition, his problem becomes one of finding out how the proposals to be evaluated would change the present input-output ratios in a number of sample markets. The unit of output taken is simply a quart of milk delivered to the consumer. For some purposes quarts delivered to the consumer's home are treated as equivalent to quarts handed across the counter of a retail store; for other purposes they are defined as different units of output. The unit of input measured is an aggregate of cents' worth of route-labor cost, route-truck cost, and processing-plant cost per quart of milk delivered.

Nearly all the data were collected during 1940, 1941 and 1942 in the course of a study of milk distribution made under Bressler's direction at the Agricultural Experiment Station in Storrs, Connecticut. Much of the material has already been published in a series of short reports issued under the general title *Efficiency of Milk Marketing*. Considerable sections of the book under review are quoted almost verbatim from these reports. It is much more than a scissors-and-paste assembly, however, and should be approached as an essentially new and significant book.

Bressler's primary concern is a belief that the present mixture of competition and monopoly has resulted in a wasteful duplication of delivery routes and plants, as well as in a waste of manpower for unnecessary or even undesirable competitive selling. He undertakes to measure the waste by seeing how much costs would be cut by each of the following methods of reducing excess capacity: substitution of alternate-day for daily deliveries; rearranging routes so as to give each present plant an exclusive territory or a territory shared with only one or two other plants; converting the delivery of milk within a given city into a monopoly with a single plant and no duplication of routes, the concern to be operated either under regulations appropriate to a public utility or as a municipally owned and operated enterprise; and elimination of house-to-house delivery so that all consumers must buy their milk in retail stores.

In measuring the probable effects of such changes, Bressler first makes a detailed cost allocation. He then works out a long series of equations relating cost of delivery per quart to such variables as quantity of milk delivered per mile of roads and streets in a given market; quantity delivered per mile of delivery routes, including duplications; the size of a processing plant; and the proportion of processing-plant capacity used. In a third step the effects of the proposed changes upon deliveries per mile and upon plant utilization are computed. Finally, the equations translate these effects into costs per quart delivered.

Bressler concludes that the introduction of alternate-day deliveries has already reduced costs by 1.8 to 2.6 cents per quart in the markets studied, as compared with what they would be under a system of daily deliveries. Each of the other proposals for reorganization would reduce costs still further, the

maximum advantage being obtainable under a municipally owned monopoly. Such a monopoly would reduce costs by an additional amount ranging from 2.3 to 4 cents a quart in the various markets. Substitution of store sales for house-to-house deliveries, if reinforced by a reorganization of wholesale delivery routes, would cut costs still further by an amount on the order of 2.4 cents a quart. From a somewhat limited field survey, it is concluded that most consumers would approve of the various changes in return for the estimated savings, except as regards elimination of house-to-house deliveries.

The space here available precludes a detailed evaluation of the methods Bressler uses and of the conclusions to which he comes. Two precautionary notes must suffice: First, although the methods used in allocating costs are well defended, they rest upon a host of debatable assumptions, estimates, and judgments. Secondly, the conclusions reached cannot serve as a basis for action in a specific market without bringing back into account many factors eliminated by the definition of the problem or touched very lightly in the analysis.

Despite these limitations the book makes an important contribution to the literature of marketing. It deserves wide reading, especially among those concerned with the statement so often made that marketing is inefficient and wasteful. Not only in its conclusions, but in its approach and methods, it marks a significant advance toward reducing that naggingly persistent question, "Does distribution cost too much?" to forms capable of meaningful measurement.

REAVIS COX

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Studies in Costing. Edited by DAVID SOLOMONS. (London: Sweet and Maxwell. 1952. Pp. xii, 643. $5.95.)

This book, a companion volume to *Studies in Accounting* by W. T. Baxter, is published on behalf of the Association of University Teachers of Accounting. With the main purpose of providing supplementary readings for accounting students, the editor, a member of the faculty of the London School of Economics, has collected what seemed to him to be the best contributions on cost accounting in the English language during the last twenty years. This reviewer believes that a number of these essays will be of value to students of economics, and that the book should also appeal to professional accountants and industrial engineers. The twenty-six articles selected are almost evenly divided between British and American authors and consist mainly of critical discussions of principles. A rough classification of the essays by authors shows that eight were written by economists; five by teachers of accounting; three each by public accountants, industrialists, and the committee on research of the National Association of Cost Accountants; the remaining four by engineers and teachers of law and history.

The first section contains two articles on the history of cost accounting. The essay by Solomons shows how the need for cost records came with the factory system and the great increase in the size and complexity of modern business. The distinction between fixed and variable costs was recognized by both

economists and accountants at an early date. In the beginning, records were kept for material and labor costs and crude estimates for overhead were added. Hamilton Church made important contributions with his ideas of production centers, burden distribution, and a supplementary rate to take care of idle time. In this country, a great impetus to cost accounting came through the work of Frederick C. Taylor. During this early period when cost systems were developing, a number of controversies took place not only as to such questions as overhead distribution but also as to what cost should include. When the importance of normal rather than actual rates of production was recognized, the next logical step was the concept of a predetermined or planned cost. Although each decade has brought refinements in techniques, emphasis on different aspects such as budgeting or distribution costs, or more recently the attempt to study the relation of cost to output, Solomons believes there is little in modern cost accounting that our fathers did not know.

The second division consisting of five essays deals with the concepts of cost. As might be expected, these articles by Theodore Lang, R. C. Edwards, and others bring out that cost concepts are much more diverse and complex than is generally assumed. In spite of the early and long controversy on such matters as whether interest should be included in cost, there are still substantial differences of opinion as to what constitutes cost. Also, costs cannot be classified into two distinct classes of fixed and variable. Even direct material cost at a particular time will differ according to the method of inventory used. As final costs are not known until the end of the accounting period, burden must be applied by the use of predetermined rates. Where there are multiple products, which is usually the case, some decision must be made about splitting up joint costs on a logical basis, or in other cases some value of a by-product must be determined as a credit to the main stream of costs. In many instances, cost is the best estimate management can make for a certain purpose.

The third section, which consists of nine articles and deals with cost as an instrument of planning and pricing, will be of particular interest to students of economics. Here will be found the excellent article on short-period price determination by R. A. Gordon, reprinted from the *American Economic Review* of June 1948, in which he reviews the Lester-Machlup controversy over marginal analysis. When we consider multiple products, selling costs, noncompetitive markets, and imperfect knowledge of demand, the marginal cost-revenue approach of the average economics text is very superficial. Because of ignorance and uncertainty, the entire analysis becomes unrealistic. Unable to deal with so many variables and with a desire for a strong and secure financial position, the businessman may rely on average total costs rather than seek maximum profits by use of marginal costs. In Gordon's opinion an explanation of business decisions resting on subjective factors is not satisfactory. The material contained in the article by Joel Dean on the break-even analysis will be familiar to American readers of economic literature. Dean contrasts this device with the flexible budget; outlines various approaches to the data by statistical, accounting, and engineering methods; and shows the difficulty

in arriving at a satisfactory means of measuring the rate of output. Dean is also careful to make the reader aware of the limitations of this management tool. In one of these essays, W. T. Baxter develops arguments for concentrating on prime cost, with an allowance for opportunity cost, instead of trying to arrive at full cost in the traditional manner. In this section, there is also an article on distribution costs, a subject which many believe has been neglected until recent years. Sections four and five are concerned with cost as a means of control and cost in the service of government.

Although the economist may not find much new material in these essays and the professional accountant or businessman may not, as a rule, be interested in topics such as the recent marginal-analysis controversy, this volume does help to bring together useful material about one area of actual business practice and the economic writings on the theory of the firm. No book can cover all aspects of managerial economics. As this book is concerned with cost, it gives only a limited approach to the much broader problem of showing how economic analysis can be used to formulate business policy. These essays contain little about demand theory or the various competitive situations under which price is determined. The theorist has yet to explore selling costs in a satisfactory manner. As many of these essays were written a number of years ago, new material on topics such as statistical determination of marginal costs is not included. The student will also have to look elsewhere for an adequate discussion of the proposals now being made for accountants to measure costs and income in units of equal purchasing power instead of the ordinary dollar unit.

This book will have a definite value to students of business, for it will give them a much broader concept of cost than is gained from the usual texts. Any attempt to determine cost is beset with many difficulties. Actually, cost has no precise or objective meaning. W. H. Hamilton, in one of the concluding essays of this volume, "Cost as a Standard of Price," speaks of accountancy as a "scheme of notation, a language, a technique, . . . and a social institution" (p. 598). Expressing it more simply, we may well conclude that cost is whatever one says it is.

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Industrial Organization; Public Regulation of Business

Entflechtung und Neuordnung der westdeutschen Montanindustrie unter besonderer Berücksichtigung der Verbundwirtschaft zwischen Kohle und Eisen. By HELMUT HENNIG. (Bern: A. Francke, 1952. Pp. viii, 240 Sw. fr. 22.—.)

This well documented and carefully reasoned book deals with the effects on the German economy of the liquidation of her coal and steel combines. After a brief outline of the immediate postwar situation of these key industries and the impact of the numerous, often contradictory, laws and regula-

tions issued by the allied powers, the author demonstrates the need for horizontal and vertical integration in these industries. In his opinion, the main economic reason for horizontal integration is the greater ability of large, multiple-plant firms to withstand fluctuations in demand. In periods of recession large firms can shut down their marginal factories and concentrate production in the more efficient plants. Furthermore the expense of switching from one product to another with changes in demand is minimized, because each of the many plants controlled by one firm can specialize in one type of product. The economic advantages of vertical integration are seen in a regular supply of qualitatively uniform raw materials and reduction of transportation costs. The ability of integrated firms to allocate joint costs in a way which will reduce the price of some high cost products is believed to be particularly important. Internal subsidies make government grants unnecessary and avoid the latter's unfavorable effects on allocation of resources.

The present structure of the German coal and steel industry is illustrated with the help of 43 charts. The far-reaching economic effects of deconcentration on the efficiency of these industries are clearly demonstrated. Their competitive position in the framework of the European Coal and Steel Community is expected to be particularly unfavorable in view of the increasing integration tendencies of the other member states. Special emphasis is given to the postwar nationalization of the French, Dutch and Italian coal mines and the large-scale public (Italy) and private (France) concentration of the steel industry in other countries.

This reviewer has no quarrel with the economic arguments presented in favor of re-integration of the German coal and steel industry; this in spite of certain restrictive practices exercised by the prewar German combinations and the dominant influence of the latter on the policies of the International Steel Cartel. The prevailing consensus of European writers on the subject is that free competition in these lines of industry is unworkable. In the absence of an agreement, high fixed costs cause price wars in periods of declining demand resulting in great losses to the companies concerned. However, in the case of Germany economic considerations have to yield to political realities. France can hardly be blamed for her insistence that these *Konzerns*, keystones of the German war potential, be dissolved, even at the cost of economic inefficiency. These political factors were ignored by the author.

HERBERT C. WITTGENSTEIN

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The Economic Blockade. Vol. I. By W. N. MEDLICOTT. (London: H. M. Stat. Office and Longmans, Green. 1952. Pp. xiv, 732. $8.00.)

This is the first of two volumes describing the blockade activities of the British government in World War II. These activities were largely conceived and directed by the Ministry of Economic Warfare, and the two volumes will constitute the official history of MEW. Like the U. S. Board of Economic Warfare, MEW was a wartime agency dissolved shortly after the cessation of hostilities. The volume under review, which carries the story generally to mid-

1941, was drawn almost entirely from official documents, to which the author had complete access. The conclusions, however, are the responsibility of the author.

The success of the British blockade against Germany in World War I led to substantial reliance upon this instrument in the plans and hopes of the British government at the outbreak of war in 1939. As events turned out, the different character of this war resulted in the relegation of the blockade to a subsidiary rôle in the final defeat of the Axis. Nevertheless, the activities in question were pursued vigorously, especially during the first two years of the war, and their ultimate contribution to the allied victory will probably never be completely evaluated.

The purpose of the blockade was to prevent the importation into Germany, directly or indirectly, of supplies which would aid that country in the prosecution of the war. The initial and traditional system for its accomplishment was the interception and detention, by the British Navy, of vessels suspected of carrying contraband items ultimately destined for Germany. An official list of contraband was published and widely disseminated. Intercepted vessels were turned over to control bases where a careful investigation of cargoes could be made. A Contraband Committee, after investigation, decided which items should be formally seized and which allowed to proceed to their destination. In flagrant cases of contraband traffic, the carrying vessels were also seized and disposed of by decisions of the Prize Court.

The success of the blockade depended upon a number of major factors. A constant stream of information from all parts of the world was needed to determine in advance the movement of cargoes and vessels, the affiliations of consignors and consignees, the precise nature of the supplies involved and the possible uses to which they could be put. Intensive studies of the German economy were made to determine its material needs and resources, its reserve supplies, and its economic vulnerability. The various informational activities of the Ministry were directed by its Intelligence Department, but heavy reliance was placed upon British consulates and other representatives throughout the world.

A second major factor was the conduct of the blockade in such a way as to minimize the antagonism of neutrals. This was a most delicate task, especially in the case of the United States. Apart from questions of face-saving and national sovereignty, the United States government—particularly between the outbreak of war in Europe and mid-1941—had to contend with powerful internal isolationist sentiment, problems of the election year of 1940, and the occasional representations of commercial and shipping interests. A particularly thorny problem was the agitation for relief measures, including the shipment of food, to occupied and nonoccupied portions of Europe after the fall of France. The British position that such shipments would inevitably help the Axis was seriously challenged by certain groups and individuals in America, most notably represented by Herbert Hoover. In many instances, the official policy of MEW was overruled by the British Foreign Office and even by Mr. Churchill himself, when friction with the United States was concerned. This

often led to discriminatory treatment of other neutrals, with politically awkward consequences.

A third major problem was that of administration in all its ramifications. The patrol responsibilities of the thinly spread British Navy had to be minimized and concentrated in the most effective areas. This led to efforts to apply various controls at the sources of supply and to obtain restrictive agreements from neutral governments as well as from major firms and associations of exporters, importers, and shipping companies. The complex story of these negotiations is systematically presented on a country by country basis. Equally well portrayed is the development of the system of contraband controls, the use of "commercial passports" or "navicerts," and the rationing of supplies to neutral countries adjacent to Germany.

Like many wartime agencies in the United States, the Ministry suffered from rapid growing pains, insufficient personnel (especially typists), lower pay scales than competing agencies, and the frustrations of "Treasury red tape." Of interest to economists is the following observation upon the qualifications desired of MEW personnel: "It was decided from the start that although the word 'economic' was used to describe the functions of the Intelligence Department, it was not desirable to use too many individuals whose specialized training lay in the field of academic economics. For much of the work a good technical training and the capacity to weigh evidence in one or other field of applied science, or experience in applied research in such fields as engineering, transportation, and agriculture, was considered to be much more valuable than a formal training in economics. A small number of individuals with high academic qualifications in economics and statistics was, however, included in specialized fields such as finance and manpower" (pp. 66-67).

The author has done an admirable job of organizing and presenting a most complicated story. His exposition is interesting, direct, and crystal clear. The book includes statistical and documentary appendices. The complete absence of footnote documentation contributes substantially to the book's readability, without sacrificing the reader's conviction of solid reliability and sound scholarship. No doubt it was this sensible omission which made possible the completion, in something less than nine years, of a task which might easily have run to half a lifetime.

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Review of Small Business. Final Report of the Select Committee on Small Business, House of Representatives, 82nd Cong., 2nd Sess. (Washington: Supt. Docs. 1952. Pp. xv, 310.)

This report, completed during the last moments of the 82nd Congress, deals with a wide range of significant small business problems. A short introductory chapter discusses the concept of small business and sketches a framework for the remainder of the report, while wisely leaving a precise definition of "small business" to others. Eight chapters follow, each dealing with a

specific problem or related group of problems: economic controls, financing, federal taxes, government procurement, government counseling, Small Defense Plants Administration, antitrust program, and unfair competitive practices.

Indecisiveness in the post-Korean stabilization program, leading to unnecessary harassment of small businesses, is deplored, and an orderly decontrol program, leaving limited emergency price freeze authority to the President, is recommended. Although the Office of Price Stabilization is given credit for stopping scare buying, and its Office for Small Business (thought by some ex-OPS personnel to be the most useless appendage of that agency) is praised, OPS operations as a whole are severely criticized. Complaint is made of "technical procedures," "legalistic terminology," and delays in granting individual price adjustments. Also, onerous filing and record-keeping requirements are castigated. The Committee gives no indication of any awareness that standardized (*i.e.*, technical) price control procedures are alternatives to control by individual whim, that legalistic terminology may be desirable for legal documents in a world where court cases are argued by lawyers and decided by judges, and that Congressional slashing of OPS funds at a time when adjustment pressure was at a very high level may have contributed to the ensuing delays. Nor does it recognize that filing and record-keeping requirements, in addition to making available indispensable price control information, have a salutary effect on compliance and greatly simplify enforcement problems. The Committee may be on more solid ground in attacking the OPS Industry Advisory Committee program (in effect, a temporary Sherman Act suspension), procrastination in issuing tailored regulations, and the failure to roll back prices which were raised hastily during the period of so-called voluntary stabilization in anticipation of a price freeze.

To alleviate the difficulties encountered in obtaining long-term loans as a substitute for equity capital, the Committee feels that the Reconstruction Finance Corporation should be continued at least until other adequate financing methods, such as government insurance of long-term bank loans, for example, are developed. While the continuing need for large amounts of government revenue is recognized, it is pointed out that high surtaxes and excess profits taxes impose a particularly severe handicap on small firms, and that consideration should be given to revising the tax structure in several ways calculated to ease this burden. After a fairly detailed discussion of the activities of major governmental procurement agencies, the Committee concludes that although the basic procurement laws themselves are not adequate for small business protection, the administration of such law as exists has been even more inadequate.

A brief outline of federal and state counseling and informational programs is presented, together with conclusions that such programs have been more successful during emergency periods than during peacetime, and that an independent federal counseling agency is more desirable than ununified small business programs conducted by several different agencies. The activities of the Small Defense Plants Administration are described in a laudatory manner,

and a recommendation for the continuance of this agency is included. The Committee finds, and fears, a continuing trend toward economic concentration, which has been stimulated by the post-Korean semimobilization, and which has not been countered effectively by haphazard antitrust enforcement. Federal Trade Commission action, and inaction, during recent years is discussed, and most of the blame for the Commission's ineffectiveness is attributed to conflicts and low morale within the Commission, although statutory deficiency also is recognized.

Despite the fact that some passages of the report remind one of the sound and fury of those who professionally champion small business, whether or not it needs or desires a champion, the abundant factual material presented, including sixty-four tables and charts, should be very helpful in a variety of university courses dealing with the problems of small business. Provocative discussions could be developed around many of the Committee's conclusions and recommendations.

ROY J. SAMPSON

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Public Utilities; Transportation; Communications

World Airline Manual, 1952. 4th ed. (Chicago: Roy R. Roadcap. 1952. Pp. 400. $12.50.)

This reference annual appears within a year after the close of the period covered, the 1952 edition providing 1951 data. It presents statistics, as comparable as possible, for the regularly scheduled airlines of the world. That means, in this country, carriers holding certificates of public convenience and necessity from the Civil Aeronautics Board, and in other countries, carriers of equivalent status. About 40 per cent of the space is devoted to United States flag services.

Many of the data are available elsewhere, but they are conveniently brought together in this volume. For each air carrier there is presented a brief historical résumé, written in the tradition of the standard financial manuals, together with a list of officers and the firm's address. There follow certain statistical data, such as the population served, the carrier's fleet and its utilization, the volume of traffic of each type, operating revenue and expense accounts, and a balance sheet. Statistical data on foreign lines sometimes relate only to earlier years. For the smaller lines not all of these data are presented; for the larger American lines, in which there is a public stock interest, certain material of interest to the investor also appears. Most carriers have been mapped, ordinarily a simple sketch for foreign lines, while a "service density map," a diagram in which the thickness of the lines between pairs of cities indicates the number of seats (or sometimes flights, when only one type of aircraft is used) scheduled daily appears for most United States flag services. Such service density maps are also presented for the Russian Aeroflot. The maps and analysis of the Russian air service are among the most interesting aspects of the volume, any perspective on things Russian being elusive.

Sources of data are not indicated, but can often be traced. Until 1949, the Civil Aeronautics Board sporadically published an *Airline Manual,* which contained foreign data similar to those presented, as currently as possible, in the volume here reviewed. The data on United States flag airlines seem largely taken from the civil Aeronautics Board's *Recurrent Reports*. The service density maps are presumably based on analyses of the published timetables of the carriers. The corporate financial data, where presented, must have been abstracted from the companies' annual reports.

The volume would have been improved by more careful editing. For example, the recent sale by United of its subsidiary, Lamsa, to Mexican interests, is appropriately indicated in the textual description of United, but is omitted from the discussion of Lamsa. Another example appears in the operating revenue accounts of United States flag airlines. This *Manual* reproduces the unadjusted figures for mail pay, and, following the practice of the Board's *Recurrent Reports,* uses that figure in the summation of operating revenues, and hence, as the component of net income. Retroactive mail pay adjustments are so common in air transport, however, that the *Recurrent Reports* present also a separate figure for adjusted mail pay. For many purposes, a more representative result would follow if the latter figure were used in calculating operating revenues and net incomes. Adjusted mail payments are omitted from the *World Airline Manual.*

This reviewer would be unable to suggest a better published source of material on foreign airlines, although unpublished material may well be available in the files of the Civil Aeronautics Board. For the domestic airlines, however, whether the reader's intent is to find data for scholarly analysis or for financial experimentation, the appraisal must be more reserved. The manual is useful for the first approximation; but the user will probably also quite frequently need to consult the original sources.

JOHN P. CARTER

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Land Economics; Agricultural Economics; Economic Geography

Introduction to Economics for Agriculture. By JOHN DONALD BLACK. (New York: Macmillan. 1953. Pp. xv, 727. $6.00.)

"This book has one clear-cut objective—to give an agricultural college student, or educated farmer or his equivalent, exactly that understanding of economics which he or she needs in order to function effectively and live happily in the world of today." So begins the preface.

The book's economic fabric is woven with strands of the economics of agriculture as the warp and with threads of the general economy as the woof. The cloth is stretched to cover much ground, a necessity if the author is to succeed in providing a single volume "intended to serve the needs both of those agricutural colleges which begin their economics with a course in the economics of agriculture and of those which begin it with a course in the

general principles of economics." The book, thus, is clearly a specialized one for which the author has an admirable, probably unequaled, experience in public service with government agencies and private groups, research, and teaching in agricultural economics at both land-grant and private universities.

If the state of advancement of a discipline were gauged by the improved calibre of college texts, agricultural economics could be judged as making progress. This book by Professor Black contributes much value-added to the stock of teaching materials available for those who prefer a specialized text. Black's text is written in view of what his experience indicates to him to be the needs of students in an agricultural college, especially those students not majoring in economics or agricultural economics and not likely to experience another course in the field. But whether to use a specialized text, rather than one on general principles, is a question to which there need be no universally valid answer.

The text's organization does not follow the current fashion. Rather than considering aggregative aspects, national income and the theory of its determination early in the book, Black introduces some elements of price and value theory immediately after orientation chapters on the organization of agriculture and its setting in a general economy. With that toe-hold, he digs into a series of seven chapters which discuss production economics at an elementary level but in much more detail than is common in the usual introductory text on general principles. Many of these pages cover the same ground as his out-of-print *Introduction to Production Economics* (1926), but it is still good teaching material except for the sections on "efficiency" and "capacity." The relative emphasis on production helps to make this book a differentiated product. So does the emphasis on consumption and commodity distribution.

The six chapters on consumption are short on demand and consumption theory, but long on the type of materials generally found in texts labeled consumption economics. This material, with the chapter on farm family living, can be of interest to those studying home economics. In this part, also, is a chapter on the currently fashionable matrix of food-people-economic development, with consideration of the situations in various countries.

The nine chapters on commodity distribution provide some discussion of price analysis as background, but the emphasis and most of the material is that usually included in a text on marketing. The rest of the book, with exceptions noted below, covers ground common to most texts on general principles. Thus, a convenient way of sharpening the differences in content between this book and the usual one on general principles is to indicate some of the things it omits or only mentions in passing and then indicate what it, but not the other, includes.

Black omits the usual amount of treatment of wages and collective bargaining, labor and industrial relations, theories of national income determination, saving, investment, and alternative economic systems. He includes much material on consumption (not demand theory) and family farm living, commodity distribution with private and cooperative marketing, price margins and

spreads, land use and tenure, agricultural and forestry credit and insurance. Common to both texts are such topics as prices and money, business cycles, equilibrium of the firm, market price determination, use and pricing of productive services, rents, international trade, and public finance. But throughout, Black emphasizes what he calls the "working out" of economic principles, leaving to the instructor most of the task of explaining the logic underlying the principles. An important exception is the economic use and pricing of productive services for which he presents the underlying logic in more detail than is usual in a beginning text.

The exposition is strongly reinforced by some 42 tables and 83 charts, all clearly labeled except one. A wealth of case material is included, and very few topics are discussed in abstract terms without reference to empirical research studies, business practices, or federal and state programs and policies. The treatment is saturated with illustrative materials, although not institutional in spirit or outlook. Instructors seeking a text with adequate case materials and examples will be satisfied. So will those who seek a text in which clarity supersedes sophistication. The writing is lucid and straightforward; the student should have no difficulty in knowing what the author is saying.

The smoothness and ease with which economic problems are discussed and disposed of may cause the mediocre or naive student to be carried away with with the notion that economists know much more than we really do. The brilliant student will wonder often and many times ask "why?" But is it not here that the instructor must play one of his necessary rôles, and how much should one expect from a single text written for the introductory level?

Now, to some evaluation of the text as a tool for teaching economics of (for or in) agriculture. A few slips in elementary analysis have crept in, including the common one of not carefully distinguishing between price elasticity and its relation to the slope at a particular point of the demand curve, as well as a confusion between price elasticity and flexibility and their relation to gross revenue so as to lead to an error concerning relative price elasticities at the farm and retail levels of demand. Those instructors who seek an elementary text which includes a rigorous exposition of economic theory will continue to seek. Those who stress theory in their lectures and desire a text rich in economic problems, the results of empirical research, and the views of a well known expert as to the "working out" of economic principles in agriculture may well find this book a bonanza. But even the brilliant student is unlikely to obtain "exactly that understanding of economics which he or she needs in order to function effectively and live happily in the world of today." A more modest objective, however, can be attained; from this book the student can learn of the types of problems with which economists struggle, if not how we fashion our brittle tools which so often prove inadequate for the tasks to which we put them.

Sidney Hoos

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Agricultural Policy of the United States. By HAROLD G. HALCROW. (New York: Prentice Hall. 1953. Pp. xiv, 458. $5.50.)

Will the policy of high rigid price supports eventually bring on a consumers' revolt, possibly resulting in destruction of the entire price-support program? Are U. S. farm and price-support programs the greatest single cause of the world dollar shortage? These are current issues now being debated within and without this country, and answers to these problems must be sought.

Halcrow's timely textbook on what he calls a "tremendously complicated" subject will go some way towards helping students, political scientists, laymen and—last not least—politicians clarify their ideas on the economic implications of our agricultural policies and programs. This is the first book (others are expected soon) which deals not with isolated policy problems, but with the bulk of them: price, including storage, policies—credit—tenure—conservation, etc. Agricultural labor is one obvious omission.

The book's emphasis is on "economics" and it brings economic analysis to bear on problems of policy by using as criteria three policy objectives, namely, increasing efficiency in agriculture, raising and stabilizing farm income, and improving welfare. These objectives, and the reason for selecting them in preference to others, are discussed in Part II. The analysis of various specified policies and programs in terms of these criteria is pursued in Part III. Part I—The Agricultural Setting—is a description of the agricultural industry and an analysis of the major economic factors effecting changes in the farm population, long- and short-run agricultural production and farm income. This part contains little new material, but is a useful and logical introduction to a discussion on agricultural policy.

Halcrow's approach will satisfy only those who believe that economic analysis is adequate for a complete appraisal and understanding of our agricultural policy. This reviewer is not one of them. There is little history of agricultural policy beyond 1920 to be found in the text, though a well chosen bibliography may lead the researcher into selected subjects. Also, there is hardly any insight to be gained into the question of how actual programs and policies come into being. As a result, his book becomes a somewhat inanimate interpretation of what is actually a dynamic and dramatic phrase of our economy.

Another shortcoming is that in his ambitious effort to master such a broad field, Halcrow has inevitably oversimplified his presentation, and some readers may find it somewhat dogmatic. There are also some seemingly unnecessary repetitions (pp. 144, 165, etc.)

These qualifications do not, however, detract from what is, on the whole, a contribution to the textbook literature in which the author has attempted to treat systematically, rationally and objectively—if at times summarily—a subject with respect to which we are easily carried away by our value judgments. As a textbook for a course in agricultural policy for undergraduate students, this may be precisely what many instructors have been seeking for some time.

ERNEST FEDER

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Internationale Regulierungen auf dem Weltweizenmarkt. By ANNELIESE BINDER. (Kiel: Institut für Weltwirtschaft, Universität Kiel. 1952. Pp. vi, 93. DM 8.-)

This pamphlet is one of the rapidly appearing sequence of research reports of the Institut für Weltwirtschaft of Kiel. It contains first a brief, chiefly descriptive, monograph on the domestic regulation of the wheat market of the four leading export countries (United States, Canada, Australia, and Argentina) and of the United Kingdom as the leading wheat importer (pp. 6-51). Secondly, it gives in 20 pages a similar matter-of-fact survey of the international wheat agreements. Aside from diagrams in the text and an appendix note with 18 statistical tables with the most pertinent data on wheat there is a tabulated survey on the various dates and provisions of the international wheat agreements of 1933, 1942, 1948, and 1949.

As a brief handbook relating properly arranged reliable information on historial economic facts this survey fulfills its purpose, as do many other pamphlets in this series. The study is not intended to and does not make any effort at coming to grips with the utterly complex economic and political problems involved in international commodity agreements. Hence the few scattered judgments on the merits and demerits of such agreements and on the responsibility of individual nations for certain defects are not to be taken too seriously. Of the wealth of American literature on the subject only the scantiest use has been made, indicating probably the persistent dearth of accessions to the Institut's library covering the war and postwar period.

KARL BRANDT

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The Economic Organization of Agriculture. By THEODORE W. SCHULTZ. (New York: McGraw-Hill. 1953. Pp. xx, 374. $5.50.)

The most valuable aspect of this book is not suggested by its title. Part I, "Economic Development and Agriculture," comprising half the volume, belongs in the growing literature which is helping to round out a general theory of economic development. The remaining portions of the study, concerning the short-term instability aspects of agriculture and proposals for organizational policy, have been largely foreshadowed in the author's earlier study of *Agriculture in an Unstable Economy* for the Committee on Economic Development, although here buttressed with more data.

The author describes the book under review as a progress report, drawing heavily on recent investigations at the University of Chicago, as well as on the studies of the Bureau of Agricultural Economics. The book is distinguished by an attempt to provide an empirical foundation for major theoretical propositions which would describe the growth and instability characteristics of the agricultural sector of an evolving economy. These are seen in the peculiar light of a modified consumer's sovereignty theory, under which ordinary notions of causality concerning technology, the food supply, and population growth sometimes appear reversed, as the author acknowledges. Yet he has gone far to reduce such concepts as the income and substitution effects of changes in demand to operational, empirically verifiable terms. The

data are in the main national aggregates for the United States, with principal emphasis on the food crops. However, some illuminating extensions of the general propositions are made to explain features of agricultural behavior in underdeveloped countries.

In Part I Professor Schultz seeks to determine and measure the principal factors affecting the long-term demand for and supply of farm food products. He reviews the population characteristics associated with industrially underdeveloped ("high food drain"), transitional ("intermediate food drain"), and advanced industrial ("low food drain") economies, and concludes that the chief secular influence on the demand for food is its declining income elasticity as population uncoils and the income level increases. An attempt is made to assign magnitudes to the relevant income elasticities.

On the supply side the chief factor is the advance in agricultural techniques, which, operating against the declining secular rate of increase in demand, brings about the chronic surplus (or "farm") problem of advanced economies. This is in contrast to the "food" problem of underdeveloped economies, where increases in output tend to be absorbed by increases in population (unless farm families come to prefer the substitution of property for children). The high productivity of modern agriculture in advanced countries is also shown to account for the declining relative importance of land as a factor limiting economic growth.

The discussion of the development of farm technology is rather unsatisfactory, largely because the author chooses to confine himself to the relatively recent and prospective contributions of publicly supported research agencies. In the lexicon of consumer's sovereignty, this leads to the curious description of the director of an agricultural experiment station as an "entrepreneur," who makes input-output calculations in response to a community preference schedule to "produce" new techniques. The fact that virtually all of this occurs outside a market mechanism makes the discussion little more than a playful analogy, but the implication is left that some day, when the tools of economic analysis have been sufficiently whetted, the processes of scientific judgment and political decision-making involved in such cases will be quantified and empirically tested under the requisite preference schedules and transformation curves.

More important, however, the discussion makes only passing reference to the essential process of pure research by virtue of which most of the particular applications of the experiment stations have been made possible (*e.g.*, the genetic basis of hybrid seed corn), and the highly important process of mechanical invention and adaptation for the most part carried on in private hands, which has been chiefly responsible for the mechanization of agriculture. The fact that these processes cannot be reduced to marginal-cost-vs.-marginal-product curves should not lead to their neglect in a description of the process of economic development. Though not readily quantifiable, they are certainly subject to empirical study.

Having considered the long-term demand and supply aspects of agriculture, Schultz turns to the questions, "What particular circumstances give rise

to the process of economic development? Why does this process occur so unevenly, more especially, why does it by-pass entire communities within an economy, say within a country having well-established internal trade and migration?" These questions remain largely unanswered, but the tentative conclusion is advanced that the disparate rates of growth can chiefly be explained in terms of differences in location, which turns out to be not a matter of physical distances, but of access to alternative economic opportunities. While this factor is undoubtedly significant, one wonders at the omission of reference to differences in availability of suitable techniques from one crop region to another, and at the ready dismissal of the influence of social institutions on the rates of introduction of new techniques and adjustments. Again, the latter can be defined in quite specific terms, although their effects are not subject to precise mensuration, *e.g.*, in the South; slavery (and its successors, sharecropping and racial discrimination), plantation agriculture, the crop-lien credit system, and the discouragement of immigration, among others. A theory which is applicable to the underdeveloped countries of the world cannot avoid dealing with factors of this type.

In Part II the author provides data concerning the underlying causes of economic instability in agriculture. Instability is explained in terms of large and abrupt shifts over short intervals in the demand and supply schedules, both of which are subject to relatively low price elasticities. On the supply side, the inputs for agriculture as a whole are shown to be remarkably stable, and the fluctuations in supply are therefore attributed chiefly to variations in yield resulting from weather conditions. These variations are analyzed by regions and products. In considering the effect which producer decisions may have on supply during the time between harvests, Schultz cites the interesting case of a backward-sloping supply schedule during famine periods in countries such as India, where an increase in food prices results in a reduction of supply because farmers are enabled to consume more of their own product. In such cases the operation of the price system cannot be depended upon to correct the maldistribution, as the early medieval advocates of price control in the western world long ago showed that they well understood.

Part III presents a variety of proposals for dealing with problems of uneven economic development and agricultural instability. In this brief review it is impossible to comment on these in detail, but it should be remarked that the section abounds in richness of suggestion. Despite the criticisms which have been made, the book as a whole merits study by others than those concerned principally with agricultural problems because of its application of empirical method, the boldness of its hypotheses, and its flashes of speculative insight into the process of economic evolution.

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Labor

The Harvest Labor Market in California. By LLOYD H. FISHER. (Cambridge: Harvard University Press. London: Oxford University Press. 1953. Pp. viii, 183. $4.50.)

The market for casual labor in agriculture presents many vexing problems, intellectual and social. Professor Fisher has revealed them fully in this penetrating analysis. The book begins with an economic theory of the harvest labor market. It then traces the history of labor contracting in California agriculture, and outlines its present status. The concluding chapters deal with wage-fixing by employers associations and the government.

Fisher's sympathies were clearly with the farm laborer. However, this did not prevent him from understanding thoroughly the motives and functions of growers and labor contractors. This ability to portray vividly a situation that has often been tragic and sometimes violent without creating any villains is one mark of the true social scientist.

Although Fisher was a professor of political science, he has employed economic analysis extensively, expertly, and at times originally in this work. The few flaws in his economics are all minor. For example, he assumes (p. 82) that "ideal" conditions of atomistic competition preclude a formal market organization such as an exchange; it would be more nearly correct to say that they require one.

Fisher's convincing explanations of the origins of various piecework pay practices will be of value to labor economists. Such practices are more easily understood in the simple harvest situation than in more complex industrial situations. His analysis of the demand for harvest larbor is an ingenious extension of the theory of the firm to an unusual situation.

Students of culture and of trade unions will be particularly interested in the discussion of the differences in the rôle of the labor contractor in different ethnic groups. According to Fisher, the Japanese or Filipino contractor performs functions close to those of a union leader; the Mexican, Negro, or native white contractor is a petty entrepreneur who acts as an agent for the grower.

It is in the analysis of the rôle of government that Fisher's interest in political processes comes to the fore. Growers dominated the administrative machinery for setting wage ceilings on agricultural labor during World War II, and Fisher's discussion shows deep concern over the domination of a public body by an interested group. Yet, bad though this may be in principle, it is not clear that it produced bad policy in this case. An economist might have called into question goals of government policy that seem here to be accepted at face value. Growers were reluctant to set wage ceilings for fear that labor supplies might be jeopardized; worker representation would surely have reinforced this reluctance. The neglected interest must then be that of the consumer; yet consumers as a group may have had more to gain from large harvests than from low wages. In other cases production has been

impaired by wage ceilings for low-paid, arduous work during periods of labor shortage.

The central problem of the book is that of providing an adequate work force for the intense labor demands of the harvest, demands that are often concentrated in a brief period of time, and at the same time offering to the worker some reasonable continuity of employment and a decent annual income. Related to this are a host of subsidiary problems: housing for migrant workers, schooling for their children, protection against the occasional dishonest or irresponsible contractor who recruits labor and fails to provide work, or who defaults on obligations to the worker. The problems of immigration from Mexico, legal and illegal, are also closely related. Although the book reviews the solutions to these problems that have been advanced by others, it espouses none. A trade union, in Fisher's opinion, would be more nearly able to decasualize labor and perform the functions of the contractor than would a government employment service. Yet he recognized that reform either by unions or government would be resisted bitterly and with almost certain success by growers and contractors. It is in part political realism or even pessimism that distinguishes Fisher's position from that of such reformers as Carey McWilliams.

The style of this book is clear, concise, and colorful. Quotations from newspapers, committee hearings, and similar sources are used to good advantage.

Though *The Harvest Labor Market in California* is narrow in scope, it is exceedingly broad in its treatment of its subject. Though it is analytical, it is nevertheless human. It is impossible to read it without feeling the greatness of the loss to social science caused by Lloyd Fisher's untimely death.

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Strikes: A Study in Industrial Conflict—with Special Reference to British Experience Between 1911 and 1947. By K. G. J. C. KNOWLES. (New York: Philosophical Library. 1952. Pp. xiv, 330. $8.75.)

Mr. Knowles' two-part study is a meticulous statistical analysis of strikes in England over a 37-year period, prefaced by a qualitative description of the institutional developments affecting industrial militancy and hence, strike statistics.

The book's central theme is the changed character of British strikes, the shift from prolonged industrial battles of the past to today's lightning "protest demonstrations," and the reasons for this transformation. The trade union movement itself rather than political and legal restrictions is seen by the author as the principal cause of strike de-emphasis. While official union policy has shifted to reliance upon negotiating machinery and "responsible dependence" upon government, the strike has become a method of rebellion by the distrustful rank-and-file members against both the peace-oriented union and a benefit-providing government. Increasingly since the General Strike of

1926, and almost exclusively since the out-break of World War II strikes have been unofficial—unsupported by the union organizations. The author suggests that the unofficial strike may be "an essential safety-valve under a system of national collective bargaining," while the official strike will languish "as long as political methods of achieving social and economic objectives" are available. This theme's treatment reveals a nostalgia for the less complicated days of old-fashioned strike action prior to the development of elaborate peace machinery and politically oriented unionism. This attitude is probably related to the author's expressed sympathy for rank-and-file worker expression which is cramped in an era of union and government bureaucracy.

After providing in Part A a description of the impact on employer-employee relations of unions, employer associations and government, the author, a member of the Oxford Institute of Statistics, demonstrates the usefulness, as well as the limitations, of strike statistics. In Part B the causes and effects of strike activity are assessed carefully, presenting available governmental statistics for the years 1911 to 1947 in a series of excellent graphs and clearly labeled tables. Standardized "strike-proneness" ratios for major British industries and geographical regions are constructed. The author concludes that regional influences on striking are "to a large extent industrial causes in disguise."

Although a statistician, Knowles emphasizes the underlying social and psychological "imponderables" as causes of strikes, while discounting the immediate causes which are subject to classification and quantification. (". . . in practice, the cause may be no more than the last straw.") In evaluating the "tenuous" statistical evidence on the effects of strikes, the results in terms of wage increases secured and production lost are found to be small. Again Knowles selects a factor which "cannot be measured at all," the general economic context within which strikes occur, as of major importance in determining actual strike costs. Throughout the study the author's acute awareness of the limited validity of statistical interpretation of strike behavior is evident, while acknowledgment (and use) is made of the contributions of the social sciences. Frequent references to American studies, such as Florence Peterson's *Strikes in the United States, 1880-1936*, and Warner and Low's *The Social System of the Modern Factory*, relate the British evidence to American experience.

Numerous sections of the five chapters which comprise the book are short essays which may be read separately with profit. Such varied subjects as the General Strike of 1926, women in strikes, fatigue and frustration, organized strike-breaking, breakaway unions and joint union-management committees are explored with pertinent reference to the contributions of other writers. Greater integration of these essays would have been desirable; their discrete excellence is not a substitute for relational significance. Although the large number of footnotes may slow reading pace, they provide such an array of historical illustrations, interesting sidelights and on occasion droll humor that eye excursions to the bottom of each page soon become habitual. Appendices within chapters and at the end of the book present more detailed information

on the statistical procedures utilized. Suggestions for improving the collectior and classification of strike statistics are made in the final appendix. Th extensive footnote citations of both American and British sources serve in liet of a bibliography.

Knowles proves well his contention that statistical description, despit its limitations has "an essential place in the systematizing of empirica knowledge." Intuitive generalizations about the trends in British strikes ir recent decades—their frequency, size, duration, officially listed causes an results—are rendered unnecessary by the availability of this quantifie experience data. However, the inability of statistical analysis to plumb th ultimate motivations and attitudes of workers and employers in conflic situations constitutes a challenge, well recognized by the author, to the disci plines which may contribute to a science of human behavior.

This study of industrial conflict in transition is a happy blend of statistica exactitude and imaginative social insights which American students of th labor movement and social groups should find of value, whatever the natur of their specialized discipline or methodological preference.

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TITLES OF NEW BOOKS

Economic Theory; General Economics

DE JONG, F. J. *De Werking van een Volkshuishouding een eerste inleiding tot het economische denken.* Vol. 1. (Leiden: H. E. Stenfert Kroese. 1953. Pp. xvi, 324. f.7.75.)

FRIEDMAN, M. *Essays in positive economics.* (Chicago: Univ. of Chicago Press. 1953. Pp. vi, 328. $5.75.)

GEARTY, P. W. *The economic thought of Monsignor John A. Ryan.* (Washington: Catholic Univ. of America Press. 1953. Pp. viii, 341. $4.)

HUNOLD, A., ed. *Wirtschaft ohne wunder.* (Erlenbach-Zürich: Eugen Reutsch Verlag. 1953. Pp. 359. Paper, fr.11.95; cloth, fr.15.40.)

Contributors to the volume include L. Einaudi, F. A. Hayek, W. Röpke, A. Rüstow, F. Baudhuin, L. Erhard, H. D. Gideonse, F. Nemschak, J. Rueff, P. Baffi, F. W. Meyer, C. Mötteli, R. Mueller, V. Muthesius, E. Welter.

HAMILTON, D. *Newtonian classicism and Darwinian institutionalism—a study of change in economic theory.* (Albuquerque: Univ. of New Mexico Press. 1953. Pp. 138. $1.)

KEIRSTEAD, B. S. *An essay in the theory of profits and income distribution.* (New York: Augustus Kelley. Oxford: Basil Blackwell. 1953. Pp. 110. $1.75.)

PAQUET, A. *Le conflit historique entre la loi des débouchés et le principe de la demande effective.* Centre d'Etudes Economiques stud. no. 7. (Paris: Lib. Armand Colin. 1953. Pp. 368.)

ROBINSON, J. *On re-reading Marx.* (Cambridge, Eng.: Students' Bookshops. 1953. Pp. 23. 2/-.)

Joan Robinson undoubtedly had a lot of fun writing these three short essays, and many readers will find them amusing as well as provocative. Two of the three, "Would You Believe It?" and "An Open Letter from a Keynesian to a Marxist," make some interesting comparisons between Marshall, Keynes, and Marx. The other, "A Lecture Delivered at Oxford by a Cambridge Economist," is concerned with the notions of equilibrium and change over time, with illustrations from Marshall, Keynes and Marx.

SLOAN, H. S. and ZURCHER, A. J. *A dictionary of economics.* 3rd ed. (New York: Barnes & Noble. 1953. Pp. viii, 356. $3.25.)

VINCI, F. *I fondamenti dell'economica.* (Milan: Istituto Editoriale Cisalpino. 1953. Pp. 318.)

WALKER, H. M. and LEV, J. *Statistical inference.* (New York: Henry Holt. 1953. Pp. xi, 508. $6.25.)

International economic papers, vol. 2. Translations prepared for the Internat. Econ. Assoc. (London and New York: Macmillan. 1953. Pp. 232. $3.50.)

Economic History; National Economies; Economic Development

DE ROOVER, R. *L'évolution de la lettre de change, XIV-XVIII siècles.* (Paris: Lib. Armand Colin. 1953. Pp. 240. 850 fr.)

DESAI, R. C. *Standard of living in India and Pakistan, 1931-32 to 1940-41.* (Bombay: Popular Book Depot. 1953. Pp. xvii, 286. Rs. 20/-.)

FARNSWORTH, C. R. *The agriculture of Uruguay.* Pub. of the Office of For. Agric. Relations. (Washington: Supt. Docs. 1952. Pp. 133.)

FRANKEL, S. H. *The economic impact on under-developed societies: essays on international*

investment and social change. (Cambridge: Harvard Univ. Press. 1953. Pp. vii, 179. $3.25.)

These essays, all of which have appeared previously, "are linked together by the basic economic problem which in one way or another underlies all of them: that of the clash between the functional forces of modern industrialism and the rapidly disintegrating indigenous economies of communities governed by forms of social organization unable to yield the living standards increasingly being demanded by all the peoples of the world" (from the Preface). Part I includes essays concerned with conceptual aspects of the problem; and Part II is made up of essays applying these concepts to Africa.

LACOUR-GAYET, J., ed. *Histoire du commerce:* vol. II—*Le commerce extra-Européen jusqu' aux temps modernes;* vol. IV—*Le commerce du XV^e^ siècle au milieu de XIX^e^ siècle;* vol. V—*Le commerce depuis le milieu du XIX^e^ siècle.* (Paris: SPID. 1953; 1951; 1952. Pp. 551; 394; 444.)

MUNSHI, M. C. *Industrial efficiency.* (Bombay: Vora & Co. 1953. Pp. 281. $2.)

This is a treatment of the subject of economic development and controlled economy in which the importance of measures for the increase of industrial efficiency is stressed. Particular attention is paid to problems of the economy of India. Measures of industrial efficiency are considered.

MURPHEY, R. *Shanghai: key to modern China.* (Cambridge: Harvard Univ. Press. 1953. Pp. xii, 232. $4.50.)

PALVIA, C. M. *An econometric model for development planning (with special reference to India.)* ('s-Gravenhage, Netherlands: Institute of Social Studies. 1953. Pp. vi, 85.)

POMMERY, L. *Aperçu d'histoire économique contemporaine.* Tome I, *1890-1939.* Tome II, *1890-1952.* Rev. ed. (Paris: Lib. de Médicis. 1952. Pp. 421; 301. 600 fr., each.)

REICHE, E. *Aussenhandelsverflechtung und Industrialisierung Argentiniens.* Kieler stud. no. 25. (Kiel: Instituts für Weltwirtschaft, Universität Kiel. 1953. Pp. vi, 157. DM 12, -.)

VAN KLAVEREN, J. J. *The Dutch colonial system in the East Indies.* (The Hague: Author, Van Nijenrodestraat 88. 1953. Pp. 212. $4.)

WAINWRIGHT, N. B. *The Philadelphia National Bank 1803-1953.* (Philadelphia: Historical Society of Pennsylvania. 1953. Pp. ix, 263. $3.)

Compendio estadistico 1952. (Mexico D.F.: Secretaria de Economia, Direccion General de Estadistica. 1953. Pp. 237.)

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Special study on economic conditions and development in non-selfgoverning territories. Summaries and analyses of information transmitted to the Secretary-General. UN pub. 1952.VI.B.2. (New York: Columbia Univ. Press. 1952. Pp. v, 415. $3.)

The structure and growth of the Italian economy. (Rome: Mutual Security Agency, Special Mission to Italy. 1953. Pp. v, 165.)

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ROMIG, H. G. *50-100 Binomial tables.* (New York: John Wiley. London: Chapman & Hall Ltd. 1953. Pp. xxvii, 172. $4.)

TINTNER, G. *Mathematics and statistics for economists.* (New York: Rinehart. 1953. Pp. xiv, 363. $6.50.)

Economic Systems; Planning and Reform; Cooperation

AMBERG, H. U. *Grundsätze socialistischer finanzpolitik.* (Winterthur: P. K. Keller. 1953. Pp. 89. Sw.fr. 8.-.)

COLE, M. *Robert Owen of New Lanark.* (New York: Oxford Univ. Press. 1953. Pp. vi, 231. $3.50.)

DAVIES, G. R. *The drift toward socialism, and other essays.* (Iowa City: Bur. of Bus. and Econ. Research, State Univ. of Iowa. 1953. Pp. 115.)

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Business Fluctuations; Prices

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Reorganization plan no. 9 for 1953. (Council of Economic Advisers) Hearings before a special subcommittee of the House Committee on Government Operations, 83d Cong., 1st sess., July 14 and 17, 1953. (Washington: Supt. Docs. 1953. Pp. 22.)

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Business Finance; Investments and Security Markets; Insurance

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The volume was first published serially in the review *Public Finance/Finances Publiques.*

Belgrano, G. A. DeP. *El impuesto sustitutivo del de herencias a las sociedades anonimas.* (Montevideo: Medina. 1953. Pp. 195.)

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"In part the study is designed to provide greater information about the [Canadian provincial sales] taxes to business men, tax administrators in other jurisdictions, and others; in part it is designed to evaluate various features of the taxes as a basis for suggesting modifications for improvement, and to assess the appropriate role of the taxes in the overall tax structure" (From the Preface).

Plank, E. H., with collaboration of J. W. Jackson. *Public finance.* (Homewood, Ill.: Richard D. Irwin. 1953. Pp. xi, 772. $6.)

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The purpose is to provide those who make technical use of international trade statistics with a description and appraisal of the principles and practices under which the statistics are compiled. Successive parts of the book, with chapters by different authors, deal with (1) basic characteristics of the statistics, (2) important derived uses of the statistics, (3) statistics of individual countries.

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Evaluation report, Mar. 24, 1953. A report of a group of business executives concerning the foreign aid programs. (Washington: Mutual Security Admin. 1953. Pp. 15.)

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The Mutual Security Act and overseas private investment. Prelim. rept. of the House Subcommittee on For. Econ. Policy, 83d Cong., 1st sess. (Washington: Supt. Docs. 1953. Pp. 37.)

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Technical assistance for productivity: a guide to services available to industry, labor and agriculture abroad. (Washington: Mutual Security Agency. 1953. Pp. 35.)

Third report on co-ordination of oil refinery expansion in the OEEC countries. (New York: Columbia Univ. Press. 1953. Pp. 85. $2.)

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"This book is concerned with the role of businessmen in an economy of free enterprise. Its purpose is to explore the implications of the much-discussed 'concept of social responsibility' as applied to businessmen. It proceeds from the assumption that the several hundred largest business firms are vital centers of power and decision, and actions of these firms touch the lives of the American people at many points. The basic questions considered are: What responsibilities to society may businessmen reasonably be expected to assume? What tangible benefits might result if the concern of many businessmen about the social implications of their work were spread widely throughout the business structure? What steps might be taken, practically, to give greater effect to the broader social aspects of business decisions? What are other basic ethical issues facing American businessmen today?" (From the preface).

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NOTES

Announcements of Retirements

The practice of publishing annually a list of members of the profession retiring from active teaching at the close of each academic year will be continued. Such list will be published in the March 1954 issue. Department heads of colleges and universities will be asked to submit the names of members of their staffs who will become emeritus in June 1954. Individuals who wish to be included in the list are asked to advise department heads or the editor of the *Review* not later than January 4, 1954.

Publications

A volume on *The Teaching of Economics,* sponsored by the International Economic Association and UNESCO is to be published in April 1954. The volume consists of reports and papers on this subject presented at the Talloires Conference, August 27-30, 1951. Members of the American Economic Association will be able to purchase the volume, through the Secretary, at a reduced price. Further particulars will be provided in the March number of the *Review.*

Economic Abstracts

The Library of the Economic Information Service of the Netherlands Ministry of Economic Affairs in collaboration with the Library of the Netherlands School of Economics and the Library of the Ministry of Social Affairs is publishing a periodical entitled *Economic Abstracts*—a semi-monthly review of abstracts on economics, finance, trade and industry, management and labour. Annual subscription rate outside of the Netherlands is Guilders 27.50. The periodical may be obtained through booksellers or from the publisher, Martinus Nijhoff, The Hague, Netherlands. Abstracts published in the form of documentary cards, as described in the September 1952 number of this *Review,* continue to be available on a subscription basis.

Research Fellowships and Grants

The Social Science Research Council has announced fellowships and grants of two distinct types to be offered in 1954: (1) Those designed exclusively to afford training in research in social science and designated as *Research Training Fellowships* and *Undergraduate Research Stipends;* (2) Those designed to aid scholars of established competence in the execution of their research, namely, the *Faculty Research Fellowships* and *Grants-in-Aid of Research.* The latter awards are not available to students working for degrees.

Inquiries should be addressed to the Social Science Research Council, 726 Jackson Place, N.W., Washington 6, D.C., and applications, on forms provided by the Council, must be filed not later than January 4, 1954.

It is to be noted that *Area Research Training Fellowships* and *Travel Grants for Area Research* are no longer available.

Deaths

Arthur A. Bright, Jr., died May 14, 1953.

Theodore T. Bullock, professor of economics and business law in the College of Business Administration of the University of Nebraska, died September 22, 1953.

Eli F. Heckscher, honorary member of the American Economic Association, died December 23, 1952.

Maurice C. Latta, assistant professor of economics in the College of Business Administration of the University of Nebraska, died September 12, 1953.

Nicholas W. Rodin, research associate in the Russian Economics Project and lecturer in McCoy College, Johns Hopkins University, died October 7, 1953.

O. M. W. Sprague, professor emeritus of Harvard University, died May 24, 1953.

Donald H. Wallace, director of the Woodrow Wilson School of Public and International Affairs, Princeton University, died September 19, 1953.

Retirements

J. I. Falconer, head of the department of agricultural economics and rural sociology Ohio State University, June, 1953.

Clarence Heer, Kenan professor of economics, University of North Carolina.

Solomon S. Huebner, as emeritus professor of insurance, the Wharton School, University of Pennsylvania, July, 1953.

D. D. Lescohier, as emeritus professor of economics, University of Wisconsin.

George A. MacFarland, as emeritus professor of accounting, the Wharton School, University of Pennsylvania, July, 1953.

William H. Spencer, Hobart W. Williams distinguished service professor of law and business, School of Business, University of Chicago, September, 1953.

John B. Woosley, Kenan professor of finance, University of North Carolina.

Appointments and Resignations

Walter Adams, of Michigan State College, has been appointed to Attorney General Brownell's Committee to Study the Antitrust Laws. He is currently studying at Harvard Law School on a Ford Foundation grant.

Mortimer Andron has been promoted from assistant professor to associate professor of economics at the University of California, Santa Barbara College.

Robert L. Aronson has been promoted from assistant professor to associate professor in the School of Industrial and Labor Relations, Cornell University.

Arthur Ashbrook, Jr., formerly of Duke University, is now assistant professor of economics at Carnegie Institute of Technology.

Lowell DeW. Ashby has been promoted to professor of economics at the University of North Carolina and has been granted a leave of absence for 1953-54 to pursue postdoctoral study at Harvard University under a Fund for the Advancement of Education fellowship

Robert W. Austin has been promoted from lecturer to professor of business administration at Harvard Business School.

Eric Axilrod has joined the staff of the College of Business Administration, Butler University as associate professor of economics.

Nathan A. Baily has been promoted from associate professor to professor of economics and business administration at American University.

Henry H. Bakken has been promoted from associate professor to professor of agricultural economics at the University of Wisconsin.

Richard J. Bannon, of the Catholic University of America, has accepted an appointment to the accounting staff of DePaul University.

Edward M. Barnet has been appointed acting assistant dean and acting director of development in the Graduate School of Business, Columbia University.

W. H. Baughn has been promoted to professor of business administration at Louisiana State University.

William J. Baumol is on leave of absence from Princeton University and will be visiting professor of economics at the University of California, Berkeley, in the spring semester

James H. Blackman, formerly of Johns Hopkins University, has been appointed associate professor of economics at the University of South Carolina.

V. W. Bladen has resigned as director of the Institute of Business Administration and has been appointed chairman of the department of political economy at the University of Toronto.

Calvin P. Blair has been appointed instructor in economics at the University of Texas.

Roy G. Blakey, of the University of Minnesota, has been requested by the University of Ankara and the U.S. Department of State to continue as professor of public finance at the University of Ankara through 1953-54.

James W. Bennett, Jr., has been promoted from assistant professor to associate professor of transportation in the College of Business Administration, University of Tennessee.

George D. Bodenhorn has been appointed assistant professor of business statistics in the Amos Tuck School, Dartmouth College.

D. J. Bogue has been appointed associate director of the Scripps Foundation for Research in Population Problems at Miami University.

Russell Bowers, of Emory University and the University of Georgia, Atlanta, has been appointed visiting professor in the College of Business Administration, University of Georgia, Athens, for the Fall quarter.

Jess W. Brandon has been appointed assistant professor of accounting at the University of Miami.

Arthur Brodshatzer has been appointed assistant professor of accounting at the State College of Washington.

Douglas S. Brown has taken a position as director of training at Manufacturers National Bank of Detroit.

Milton P. Brown has been promoted from assistant professor to associate professor of business administration in the Harvard Business School.

Pembroke H. Brown, retired from the University of Illinois, is teaching at Indiana State Teachers College, Terre Haute, in the current academic year.

Karl Brunner has been promoted to associate professor of economics at the University of California at Los Angeles.

Robert B. Buchele has been appointed assistant dean of the School of Business Administration, University of California at Los Angeles.

K. A. H. Buckley has been promoted to associate professor of economics at the University of Saskatchewan.

Harvey C. Bunke has been appointed assistant professor of transportation at the State University of Iowa.

Robert L. Bunting has returned to the University of North Carolina as assistant professor of economics after having been on leave for military service.

E. Douglas Burdick has been promoted from associate professor to professor in the economic and social statistics department of the Wharton School, University of Pennsylvania.

Carl R. Bye has been named dean of the Graduate School at Syracuse University. He will continue as associate dean of the Maxwell School but will no longer serve as chairman of the department of economics.

G. R. Bythewood has been appointed instructor in business administration at Louisiana State University.

Harold R. Capener has been appointed associate professor in the department of agricultural economics and rural sociology of Ohio State University.

Alfred Carlip has been appointed instructor in economics at Wesleyan University.

Thomas H. Carroll, dean of the School of Business Administration at the University of North Carolina, has been appointed director of the Division of Economic Development of the Ford Foundation for the year 1953-54.

K. Laurence Chang has been appointed instructor in business administration at the University of Dayton.

Stanley Chipper, formerly of Alma College, has been appointed lecturer in economics at Michigan State College.

J. W. Chisholm has been promoted to associate professor of economics at Louisiana State University.

Carl P. Ciosek has resigned as instructor in economics at the University of Connecticut.

Robert L. Clodius has been promoted from assistant professor to associate professor in the department of agricultural economics, University of Wisconsin.

Sanford Cohen has been appointed assistant professor of economics at Western Reserve University.

Marshall R. Colberg has been promoted to professor of economics at Florida State University.

Arnold Collery has been appointed instructor in economics at Amherst College.

Lewis C. Copeland has been appointed lecturer in statistics in the College of Business Administration, University of Tennessee.

John R. Craf has been named dean of the School of Business, University of Louisville.

M. E. Cravens, Jr., has been appointed associate professor in the department of agricultural economics and rural sociology of Ohio State University.

Wilfrid H. Crook, of Colgate University, was on leave in the spring semester for research study on the general strike under a grant from the Social Science Research Foundation.

John T. Croteau, formerly of the Catholic University of America, has been appointed associate professor at the University of Notre Dame.

Donald Cullen has been appointed assistant professor in the School of Industrial and Labor Relations, Cornell University.

John H. Cumberland has been appointed assistant director and research associate professor in the Bureau of Business and Economic Research of the College of Business and Public Administration, University of Maryland.

M. Gordon Daniels has been appointed instructor in economics at Texas Agricultural and Mechanical College.

Kenneth R. Davis has resigned from the University of North Carolina to join the faculty of the Amos Tuck School, Dartmouth College, as assistant professor of marketing.

Lloyd DeBoer has been appointed instructor in marketing at the University of Illinois.

S. Joseph DeBrum, formerly of SCAP, has been promoted to professor of business and assistant director, School of World Business, San Francisco State College.

Walter H. Delaplane has been named dean of the School of Arts and Sciences of Texas Agricultural and Mechanical College.

Robert R. Dince has been appointed assistant professor in the College of Business Administration, University of Georgia.

Riley S. Dougan has been appointed instructor in the department of agricultural economics and rural sociology of Ohio State University.

Richard A. Easterlin has been promoted from instructor to assistant professor of economics at the Wharton School, University of Pennsylvania.

H. C. Eastman has been appointed lecturer in the department of political economy at the University of Toronto.

Elvis L. Eckles has been promoted from instructor to assistant professor of economics at the University of Illinois.

Bruce E. Edwards, formerly of the University of Michigan, has been appointed instructor in economics at the University of Illinois.

G. A. Elliott has been granted a year's leave of absence from the University of Toronto to accept a fellowship from the Guggenheim Foundation.

Edward G. Emerling has been appointed instructor in economics at the Catholic University of America.

M. Erselcuk, on leave from Purdue University, is teaching at the University of Mandalay, Burma, under a Fulbright grant.

Khodadad Farmanfarmaian, formerly of the University of Colorado, has been appointed instructor in economics at Brown University.

Blair C. Ferguson has been appointed instructor in economics at Washington and Jefferson College.

Leo Fishman has been granted leave from West Virginia University to accept a Ford Foundation faculty fellowship.

J. Anderson Fitzgerald is on leave from the University of Texas to serve in the Education Division of the Mutual Security Agency in Bangkok, Thailand until April 1954.

John R. Fitzpatrick has been appointed lecturer in labor law at the Catholic University of America.

Dwight P. Flanders has been promoted from associate professor to professor of economics at the University of Illinois.

Minard I. Foster has been appointed assistant professor of marketing at the University of Miami School of Business Administration.

George N. Francis has been promoted from assistant professor to associate professor of accounting at Los Angeles State College of Applied Arts and Sciences.

Gerald F. Franklin has been promoted from instructor to assistant professor of economics at the University of Miami.

William C. Frederick has been appointed assistant professor of economics at the University of Tampa.

Robert Freedman, of Colgate University, is director of the Colgate Economics Study Group at Knoxville, Tennessee, in the current semester.

Irwin Friend has been promoted from lecturer to research professor of finance at the Wharton School, University of Pennsylvania.

John L. Fulmer, formerly of the University of Virginia, is now associate professor of business administration at Emory University.

Merrill M. Gaffney has been appointed instructor in economics at the University of Oregon.

Lowell N. George has resigned as head of the economics department of Muskingum College to take a position in the Training Division of the Goodyear Tire and Rubber Company.

Frank R. J. Gerard, formerly with J. Walter Thompson Co., in India, and with the Canadian Bank of Commerce, has been appointed lecturer in foreign advertising and marketing at the School of World Business, San Francisco State College.

James A. Gerding has been appointed lecturer in management in the School of Business, Indiana University.

Robert A. Goodell has joined the faculty of the University of Maryland as assistant professor of business organization.

Charles S. Goodman has been promoted from assistant professor to associate professor of marketing and foreign commerce at the Wharton School, University of Pennsylvania.

Oscar R. Goodman has been appointed associate professor of business administration at the State College of Washington.

Michael Gort has been appointed associate in economics at the University of California, Berkeley.

Wytze Gorter has been promoted to associate professor of economics at the University of California, Los Angeles.

G. K. Goundrey has been appointed lecturer in the department of political economy, University of Toronto.

Truman F. Graf has been promoted from instructor to assistant professor of economics at the University of Wisconsin.

F. J. Guerra has been appointed instructor in accounting at Louisiana State University.

Editha Hadcock has been promoted from associate professor to professor of economics at De Pauw University.

Morris Hamburg has been promoted from instructor to assistant professor of statistics at the Wharton School, University of Pennsylvania.

Rector R. Hardin has resigned from the University of Georgia to become head of the economics department, Howard College, Birmingham, Alabama.

William H. Harris has been appointed assistant professor of business administration in the College of Business Administration, University of Georgia.

J. W. Harvey has been appointed lecturer in the department of political economy in the University of Toronto.

Robert O. Harvey, formerly of Indiana University, has been appointed assistant professor of economics at the University of Illinois.

Everett D. Hawkins has returned to Mount Holyoke College after serving the Department of State in Indonesia and Washington the past two years.

Ralph C. Heath is now assistant professor of transportation at the University of Washington after having completed a tour of active duty with the Air Force.

K. F. Helleiner has been promoted from assistant professor to associate professor in the department of political economy, University of Toronto.

Charles N. Henning has been promoted to associate professor of finance in the College of Business Administration, University of Washington.

William C. Henry has been promoted from associate professor to professor of accounting at the University of Tennessee.

W. L. Heuser has been appointed instructor in economics at Louisiana State University.

Charles M. Hewitt, of the University of Alabama, is visiting lecturer in business law at Indiana University in the current academic year.

C. Addison Hickman has resigned from the University of Illinois to accept an appointment as head of the department of economics, University of North Carolina State College, Raleigh.

Howard L. Hoag has been promoted from instructor to assistant professor of economics at Purdue University.

Donald S. Holm, Jr., has been promoted to associate professor of business management at the University of Missouri.

Richard H. Holton has been appointed assistant professor of economics at Harvard University.

Joseph S. Hopson, of the University of Texas, has been appointed assistant professor of accounting in the College of Business Administration, University of Georgia.

L. L. Hsiao has been appointed instructor in economics at Lafayette College.

Harriet D. Hudson has resigned from the University of Illinois to accept a deanship at Randolph-Macon College.

Holland Hunter has been promoted to associate professor of economics at Haverford College and is acting chairman of the department of economics.

Neil H. Jacoby, of the University of California at Los Angeles, has been appointed to the Council of Economic Advisers.

F. Thomas Juster has been appointed instructor in economics at Amherst College.

Robert Kane has been appointed instructor in management in the School of Business Administration, University of Miami.

K. William Kapp has been promoted to professor of economics at Brooklyn College.

Arthur Karasz has been appointed United Nations technical consultant to the Central Bank of Bolivia.

Robert L. Katz has been appointed assistant professor of business administration at the Amos Tuck School, Dartmouth College.

Peter Keir, formerly of Amherst College, is now with the Board of Governors of the Federal Reserve Board in Washington, D.C.

Richard J. Kempe, formerly economist in the Department of Commerce, has been appointed economic editor of the National Committee for a Free Europe's magazine *News from Behind the Iron Curtain.*

Hugh B. Killough has been appointed chairman of the department of economics at Brown University.

Charles A. Kirkpatrick has been promoted to professor of marketing at the University of North Carolina.

Chester A. Kline has been promoted from assistant professor to associate professor in the insurance department, Wharton School, University of Pennsylvania.

William A. Knoke has been promoted to associate professor in the department of marketing, State University of Iowa.

David L. Koefod, formerly of the University of Minnesota, has been appointed assistant professor and research assistant in the Amos Tuck School, Dartmouth College.

Irving B. Kravis has been promoted from assistant professor to associate professor of economics in the Wharton School, University of Pennsylvania.

Edwin Kuh has been appointed lecturer in political economy at the Johns Hopkins University for the current academic year.

Frederick C. Kurtz, of George Washington University, has been appointed assistant professor of accounting in the College of Commerce, West Virginia University.

Nathan Lacher has been appointed lecturer in accounting at the Catholic University of America.

Harold Q. Langenderfer has been appointed assistant professor of accounting at the University of North Carolina.

Thomas P. Lantos has resigned from San Francisco State College to accept a position in the economics department of the Bank of America.

William L. Larger has been appointed instructor in marketing in the School of Business, University of Louisville.

Harold J. Leavitt has been appointed associate professor of business administration in the School of Business of the University of Chicago, effective January 1, 1954. He is now serving as lecturer in University College.

Leonard A. Lecht has resigned as assistant professor of economics at the University of Texas to accept a position at Carleton College.

William N. Leonard, formerly of Pennsylvania State College, is now chairman of the department of economics and of the division of social science at Hofstra College.

Theodore H. Levin has been promoted from assistant professor to associate professor of economics and business administration at American University.

John M. Lishan has been appointed acting assistant professor of economics at the University of California, Los Angeles.

Charles R. Lockyer has been appointed research associate at the Bureau of Business Research of the University of Kentucky.

Clarence D. Long, on leave from the Johns Hopkins University, is serving as a member of the staff of the Council of Economic Advisers.

Lawrence F. Mansfield has been appointed assistant professor of economics at the University of Tennessee.

Edward Marcus, of Brooklyn College, has received a grant from the Merrill Foundation for research on the effects of business cycles on U.S. imports in the post-World War II period.

Shelly M. Mark, formerly chief economist of the Hawaii Office of Price Stabilization, has resumed full time teaching duties at the University of Hawaii.

Donald B. Marsh has been appointed Bronfman professor of economics at McGill University.

Will E. Mason has been appointed assistant professor of economics at Washington and Jefferson College.

John W. May has been promoted to professor of economics at Washington and Jefferson College.

Roy W. Mayberry, Jr., has been appointed instructor in economics in the College of Commerce, West Virginia University.

Thomas Mayer, of Columbia University, has been appointed assistant professor of economics in the College of Commerce, West Virginia University.

Kenneth McCaffree is on leave from the University of Washington to serve with the Industrial Relations Division of the Atomic Energy Commission at Richland, Washington.

Campbell R. McConnell has been appointed assistant professor of economics in the College of Business Administration of the University of Nebraska.

John W. McConnell, on leave from the School of Industrial and Labor Relations, Cornell University, is teaching at the University of Patna, India, on a Fulbright grant.

Archibald M. McIsaac has been appointed chairman of the department of economics in the Maxwell School of Syracuse University, succeeding Carl R. Bye.

S. Sterling McMillan has been appointed chairman of the department of economics at Western Reserve University.

James E. McNulty, Jr., has been promoted from lecturer to assistant professor of business economics in the School of Business Administration, University of California at Los Angeles.

Leon A. Mears, formerly of the Teaching Institute of Economics of the University of California, has been appointed associate professor of production management in the School of World Business, San Francisco State College.

Robert W. Merry has been promoted from associate professor to professor of business administration at Harvard Business School.

Raymond F. Mikesell is on leave of absence from the University of Virginia in the first semester of this year to teach in the National War College in Washington.

Ervin Miller has been promoted from instructor to assistant professor of finance in the Wharton School, University of Pennsylvania.

Frank B. Miller, Jr., has been appointed research associate in the School of Industrial and Labor Relations, Cornell University.

William G. Modrow has been appointed instructor in economics at Texas Agricultural and Mechanical College.

Franklin G. Moore, of Northwestern University, is visiting professor of production management for the year 1953-54 at the University of California at Los Angeles.

John R. Moore has been appointed instructor in economics in the College of Business Administration of the University of Tennessee.

James A. Morris, of the University of South Carolina, has been granted a Ford Foundation fellowship for study in England at Oxford University and at the London School of Economics.

Herbert C. Morton has been appointed assistant professor and research editor in the Amos Tuck School, Dartmouth College.

George L. Moss has been appointed assistant professor of accounting at the University of Miami.

John C. Murdock has been promoted to assistant professor of economics at the University of Missouri.

Oscar S. Nelson has been promoted from associate professor to professor of accounting in the Wharton School, University of Pennsylvania.

Alfred Nicols has been promoted from assistant professor to associate professor of business economics in the School of Business Administration, University of California at Los Angeles.

William H. Nicholls is on leave of absence from Vanderbilt University to serve on the staff of the Council of Economic Advisers.

Kenji Okuda has been appointed acting assistant professor of economics for the year 1953-54 at State College of Washington.

Robert F. Olberding has been appointed instructor in business organization and management in the College of Business Administration, University of Nebraska.

C. S. Overmiller has resigned from Louisiana State University to accept a position with the Federal Reserve Bank of Atlanta.

James M. Parrish has been promoted to lecturer in economics and has been appointed assistant dean of the School of Business Administration of the University of North Carolina.

James Parthemos has been appointed assistant professor of economics at the University of South Carolina.

Robert W. Paterson, of the University of Virginia, has been appointed associate professor of economics and director of the recently organized Bureau of Business and Economic Research at the University of South Carolina.

Robert T. Patterson has been appointed assistant professor in the department of economics, School of Commerce, New York University.

Ralph W. Pfouts, of the University of North Carolina, has been given leave to study at Cambridge University on a postdoctoral fellowship awarded him by the Social Science Research Council.

Almarin Phillips has been promoted from instructor to assistant professor of economics in the Wharton School, University of Pennsylvania.

Harold J. Plous has been promoted from instructor to assistant professor of economics at the University of California, Santa Barbara College.

Jack E. Prince has been appointed assistant professor of economics at Ohio Wesleyan University.

Charles R. Purdy has been appointed instructor in business organization and management in the College of Business Administration of the University of Nebraska.

Donald L. Raun, formerly of Washington State College, is now assistant professor of accounting at Los Angeles State College of Applied Arts and Sciences.

Robert Rauner, of the London School of Economics, has been appointed instructor in economics at Trinity College.

Robert Risley has been appointed assistant professor in the School of Industrial and Labor Relations, Cornell University.

George W. Robbins has been appointed acting dean of the School of Business Administration, University of California at Los Angeles.

Evan O. Roberts has been promoted to professor of economics and marketing in the College of Commerce, West Virginia University.

Marshall A. Robinson has been appointed assistant director of research and assistant professor of finance at the Amos Tuck School, Dartmouth College.

Robert M. Robinson has been appointed associate in economics at the University of California, Berkeley.

Murray Ross has been appointed lecturer in economics in the Catholic University of America.

Eugene Rotwein has been promoted from assistant professor to associate professor of economics at the University of Wisconsin.

Charles A. Rovetta, formerly of the School of Business, University of Chicago, has been appointed dean of the School of Business, Florida State University.

Roy J. Sampson has been appointed assistant professor of business administration and economics at Pacific University.

Lester C. Sartorius has resigned from the University of Illinois to accept a position as director of marketing research with Deere and Company in Moline, Illinois.

Dwight D. Saunders has been appointed instructor in economics at the University of Oklahoma.

Howard G. Schaller has been appointed assistant professor of economics in the College of Business Administration of the University of Tennessee.

Fred Schiller has been appointed instructor in economics at Lafayette College.

Harold B. Schmidhauser is visiting professor in the School of Industrial and Labor Relations, Cornell University.

Carlton R. Schroeder has been appointed instructor in economic geography at the State College of Washington.

Morton J. Schussheim has been appointed lecturer in economics at Western Reserve University.

Eli Schwartz has been appointed lecturer in economics at Michigan State College.

Robert Sedgwick has been promoted to assistant professor of economics at Syracuse University.

Sherman Shapiro has been appointed assistant professor of economics at the University of Texas.

Ansel Sharp has been appointed instructor in economics at Louisiana State University.

Louis Shere, of Indiana University, has accepted a one-year appointment to the staff of the Council of Economic Advisers.

G. Findlay Shirras has been appointed visiting professor of economics at the University of Florida.

B. F. Sliger has been appointed assistant professor of economics at Louisiana State University.

Hayden W. Smith has been appointed acting assistant professor of economics at the University of California, Davis.

Spencer M. Smith has been appointed assistant professor of economics in the College of Business and Public Administration of the University of Maryland.

Louise Sommer is visiting professor of economics at American University.

George A. Steiner has returned to the University of Illinois after a two-years' leave of absence during which he served in the Defense Production Administration and the Office of Defense Mobilization.

Bryce D. Stone has been appointed instructor in economics in the College of Business Administration of the University of Tennessee.

Adolf Sturmthal, of Bard College, is visiting professor in the School of Industrial and Labor Relations, Cornell University.

S. Stykolt has resigned as lecturer in the Institute of Business Administration and has been appointed lecturer in the department of political economy in the University of Toronto.

G Winston Summerhill is visiting lecturer in business administration at the University of North Carolina.

Ancel G. Taflinger has been appointed assistant professor of business administration at the State College of Washington.

Howard M. Teaf, Jr., on leave from Haverford College, is visiting professor at the Institute of Social Studies, The Hague.

Carey C. Thompson has been granted a leave of absence from the University of Texas to accept a fellowship from the Fund for the Advancement of Education.

R. W. Thompson, of the University of Toronto, has been appointed assistant professor in the department of political economy of McMaster University.

Warren S. Thompson has retired from the Scripps Foundation for Research in Population Studies at Miami University. He is at present engaged in a study of California population sponsored by the John Randolph Haynes and Dora Haynes Foundation of Los Angeles.

Gene B. Tipton has joined the staff of Los Angeles State College of Applied Arts and Sciences as a lecturer in economics.

L. Reed Tripp has been promoted from the rank of associate professor to professor of economics at the University of Wisconsin.

Donald S. Tucker, professor emeritus of economics at Massachusetts Institute of Technology, will again be visiting professor of economics at De Pauw University the second semester of the current academic year.

Lloyd Valentine has been appointed visiting assistant professor of business administration at Louisiana State University.

Paul M. Van Arsdell has been appointed associate dean of the College of Commerce and Business Administration at the University of Illinois.

Paul A. Vatter has been promoted from instructor to assistant professor of statistics in the Wharton School, University of Pennsylvania.

Hugh G. Wales has been promoted from associate professor to professor of marketing at the University of Illinois.

Arthur E. Warner has resigned from Indiana University to accept an appointment as assistant professor of real estate at Michigan State.

Eleanor Webber has been appointed instructor in economics at New Jersey College for Women, Rutgers University.

Emanuel T. Weiler has resigned from the University of Illinois to become head of the department of economics at Purdue University, succeeding James A. Estey now full-time professor of economics.

Samuel Weiss has been appointed lecturer in statistics at the Catholic University of America.

Ernest D. Wenrick has a position with the Tennessee Valley Authority.

Thomas Wenzlau has been appointed instructor in economics at Wesleyan University.

J. Fred Weston, associate professor of finance, has been named associate dean of student affairs at the University of California at Los Angeles.

P. K. Whelpton has resigned as director of the Population Division of the United Nations to return to Miami University as director of the Scripps Foundation for Research in Population Problems.

Thomas L. Whisler has resigned from the University of Missouri to accept a position as assistant professor in the School of Business of the University of Chicago.

William L. Williams has been appointed instructor in accounting at the University of Georgia.

Edwin E. Witte, on leave from the University of Wisconsin, is teaching at the New York State School of Industrial and Labor Relations, Cornell University, in the first semester.

Walter F. Wolf has been appointed instructor in economics at the University of Connecticut.

Norman J. Wood has been promoted from instructor to assistant professor of economics in the College of Business Administration, University of Tennessee.

Wallace O. Yoder has been appointed assistant director of the Bureau of Business Research and faculty lecturer in business administration in the School of Business of Indiana University.

Edwin Young has been appointed chairman of the department of economics at the University of Wisconsin.

Alois L. Zaremba, of Ohio State University, has been appointed lecturer in economics at Western Reserve University.

The American Economic Review

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HANDBOOK OF THE AMERICAN ECONOMIC ASSOCIATION

Edited by the Secretary

CONTENTS

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Executive Office: American Economic Association, Northwestern University, Evanston, Illinois

Inquiries and other communications regarding membership, meetings, and the general affairs of the Association, as well as orders for publications, should be addressed to Dr. James Washington Bell, Secretary of the American Economic Association, Northwestern University, Evanston, Illinois.

Entered at the post office at Menasha, Wisconsin, as second class matter. Acceptance for mailing at special rate of postage under the provisions of Sec. 34–40 Par. (D) provided for in the Act of February 28, 1925, embodied in paragraph 4, section 412, P. L. and R., authorized September 13, 1928.

The *American Economic Review* is published five times a year, in March, May, June, September, and December, and is sent to all members of the American Economic Association as one of the privileges of membership, $5.00 of the annual membership dues of $6.00 being in payment of a year's subscription to the publication. Printed in U.S.A.

PRICE, $2.00

PURPOSE OF THE AMERICAN ECONOMIC ASSOCIATION

The American Economic Association is an organization composed of per sons interested in the study of political economy or the economic phases o political and social questions. As may be seen by examining the list of mem bers printed in this supplement, not only are all the universities and the mos prominent colleges in the country represented in the Association by thei teachers of economics and related subjects, but a large number of member come from among businessmen, journalists, lawyers, men in public life, an others interested in economic principles, or, more often, in their application to social life. The Association has, besides, a growing representation in foreig countries.

The annual meetings, usually held during the Christmas holidays, are ar ranged as forums for the discussion of scientific questions and problems o social and economic policy. They give opportunity for contact and genera understanding among teachers, students, and businessmen interested in suc questions. The meetings aim to counteract any tendency to particularism which geographical separation and diverse interests might otherwise foster

The publications of the Association were begun in March, 1886. The firs series of eleven volumes was completed by a general index in 1897. The secon series, comprising two volumes, was published in 1897–99, and in additio thereto the Association issued during 1896–99 four volumes of *Economi Studies*. In 1900 a third series of quarterly publications was begun with th Papers and Proceedings of the Twelfth Annual Meeting, and was continue through 1910. *The Economic Bulletin*, issued quarterly and devoted to bibli ography and current notes, was also published by the Association during th three years, 1908, 1909, and 1910.

In 1911 the Association began publishing the *American Economic Review* a quarterly journal devoted to articles on economic subjects, reviews, ab stracts of articles in current journals, and a classified bibliography of eco nomic publications. During the forty-one years of its existence, the *Review* has made a place for itself among the scientific journals of the country.

The American Economic Association is the organ of no party, sect, o institution. It has no creed. Persons of all shades of economic opinion ar found among its members, and widely different views are given a hearing i its annual meetings and through its publications.

With the exception of the Editor of the *American Economic Review* and th Secretary-Treasurer, the officers of the Association receive no remuneration for their services. The Association's entire receipts are expended for the edit ing, printing, and circulation of the publications and for the annual meetings.

CHARTER AND BYLAWS OF THE AMERICAN ECONOMIC ASSOCIATION

The charter of incorporation of the American Economic Association, incorporated in the District of Columbia, February 3, 1923, provides as follows:

I. The name or title by which the society shall be known is the American Economic Association.

II. The time for which it is organized is perpetual.

III. The particular business and object of the society are as follows:

1. The encouragement of economic research, especially the historical study of the actual conditions of industrial life;

2. The issue of publications on economic subjects;

3. The encouragement of perfect freedom of economic discussion. The Association as such will take no partisan attitude, nor will it commit its members to any position on practical economic questions.

IV. The number of its trustees for the first year of its existence shall be fourteen.

The following bylaws have been adopted for the government of the Association:

I. Membership

1. Any person interested in economic inquiry may, on the nomination of a member, be enrolled in this Association.

2. There shall be six classes of members other than honorary: members paying an annual fee of $6.00; family members (two or more living at the same address, second membership without subscription to the publications of the Association) paying an annual fee of $1.00; junior members (available to registered students for three consecutive years only) paying an annual fee of $3.00; subscribing members paying an annual fee of $10.00; contributing members paying an annual fee of $25.00 or more; and life members comprising those members who contribute $100.00 or more in a single payment. Life members shall be exempt from annual fees. Members shall have each year the privilege of designating the class of membership they choose for that year.[1]

3. Foreign economists of distinction, not exceeding twenty-five in number, may be elected honorary members of the Association.

4. Every member is entitled to receive, as they appear, all reports and publications of the Association.

II. Trustees

The trustees of this Association shall not be less than fourteen or more than fifteen in number, and the Board of Trustees shall be known as the Executive Committee. The Board of Trustees shall be composed of the persons elected as the Executive Committee at the time and place and in the manner set forth in the following bylaw providing for the election of officers.

III. Officers[2]

1. The Association shall have the following officers who shall be elective officers: a President, two Vice-Presidents, six elected members of the Executive Committee. The terms of office of the President and Vice-President shall each be one year. The terms of office of the six elected members of the Executive Committee shall each be three years, two of the six terms of the six elected members of the Executive Committee to expire each year. Each regular term of office shall coincide with a calendar year or a multiple thereof.

[1] As amended at the December 28, 1940, and the December 29, 1948 annual meetings.

[2] Amendments as adopted at the annual meeting, December 29, 1933, and by mail ballot announced at the Business Meeting, January 26, 1946.

2. As early in each year as practicable, the President of the Association shall appoint Nominating Committee, consisting of a past officer,[1] as chairman, and not less than five oth members of the Association. The names of the Committee shall be published in the March June issue of the AMERICAN ECONOMIC REVIEW with an invitation to the general membersh that suggestions of nominees for the various offices be sent to the chairman of the Committe The Nominating Committee shall be instructed to present to the Secretary of the Associatic on or before September 1 of each year a nominee for the presidency and two or more nomin tions for each elective office to be filled, the nominees being members of the Association. Tl candidate for president shall be selected by an electoral college consisting of the members the Nominating and the Executive Committees. Space shall be provided on the ballot for tl individual voter's alternative choice.[3]

3. Elective officers shall be chosen through elections to be held during the last three[1] montl of the term of office of his predecessor. Each member shall be given the opportunity to vote t mail. The results of the election shall be certified and announced by the Secretary at the annu business meeting.

4. The Association shall have the following officers who shall be appointed by the Executi Committee: a Secretary, a Treasurer, a Managing Editor, and a Counsel. The terms of offi of each of these officers shall be three calendar years. The Managing Editor shall, with tl advice and consent of the Executive Committee, appoint members to an Editorial Board assist him. The President may, at his discretion and with the advice and consent of the Exec tive Committee, appoint a Program Committee.

5. The Executive Committee shall consist of the President, the Vice-Presidents, the Secretar the Treasurer, the Managing Editor, the three ex-Presidents who have last held office, and s elected members, provided that the Secretary, the Treasurer, and the Managing Editor sha not be entitled to vote in the Committee's meetings.

IV. DUTIES OF OFFICERS

1. The President of the Association shall preside at all meetings of the Association and the Executive Committee, and in consultation with the Program Committee, shall prepare tl programs for the annual meetings. In case of his disability, his duties shall devolve upon tl Vice-Presidents in the order of their election, upon the Secretary, and upon the Treasurer.

2. The Secretary shall keep the records of the Association and perform such other duties the Executive Committee may assign to him.

3. The Treasurer shall receive and have the custody of the funds of the Association, subje to the rules of the Executive Committee.

4. The Executive Committee shall have the control and management of the funds of tl corporation. It may fill vacancies in the list of officers, and may adopt any rules or regulatio for the conduct of its business not inconsistent with this constitution or with rules adopted the annual meeting. It shall act as a committee on time and place of meetings and perform su other duties as the Association shall delegate to it. A quorum shall consist of five members.

5. The Editorial Board shall have charge of the publications of the Association. The Mana ing Editor shall be ex officio member and chairman of the Editorial Board.

6. The office of the corporation for legal purposes shall be at the office of the Counsel in tl District of Columbia, and legal process against the corporation may be served on said Couns

V. ANNUAL MEETING

The annual meeting of this corporation shall be held at such time and place as may be d termined by the Executive Committee. Notice of such time and place shall be given by public tion in the regular journal of the corporation, now known as the AMERICAN ECONOMIC REVIE at least ten days prior to such meeting. The first annual meeting shall be held at Providenc

[3] As amended at the December 29, 1938, and December 29, 1941, annual meetings.

EDITORIAL NOTE

The present edition of the handbook of the Association contains the follow
ing information: lists of officers, charter and bylaws of the Association, a
alphabetical list of members and a geographical list of members and sub
scribers (with addresses), as of April 15, 1953, and statistical summaries.

This 1953 *Handbook* differs in form from the "who's who" directories. A
revised directory is planned for publication in 1955. In the meantime, sinc
our membership list has been subject to so many changes, it was considere
desirable to bring out a handbook at this time.

The information in the appendix brings up to date some of the tables con
tained in previous directories and handbooks and also adds some new ma
terial. The detail is shown in the table of contents.

The increasing amount and variety of inquiries received by this offic
prompt the Editor to include in this note the following summary of publishe
sources of information concerning the activities of the Association:

1. *The American Economic Review*—a quarterly publication containin
main articles, book reviews, bibliographical and personal notes, records c
special investigations by individuals and public commissions.

2. *The Papers and Proceedings* of the annual meetings of the Associatio
(edited by the Secretary)—main papers, round table summaries, togethe
with reports of the Secretary, the Treasurer, the Editor, Finance Committee
Auditor, standing and special committees, minutes of the Executive Com
mittee and of the business meetings. The appendix contains a cumulative lis
of the contents of the *Papers and Proceedings* from 1911 and of the publica
tions of the Association since 1886.

3. *The Handbook* and *Directory*—the former biennial handbook has sinc
1938 been published irregularly, in two forms; namely, the handbook, con
taining names and addresses of members, together with the year from whic
their continuous membership dates, and the directory, which is a specialize
"who's who" of members, with classification according to subject-matte
fields. Directories appeared in 1938, 1942, and 1948. The 1905 handboo
contained very brief biographical sketches of members.

4. *Information Booklet*—describing the purposes, organization, and activi
ties of the Association, designed to answer inquiries from prospective mem
bers. Sent free upon request.

JAMES WASHINGTON BELL, *Secretary*

LIST OF MEMBERS

(As of April 15, 1953)

¶Life Members ††Contributing Members §Subscribing Members ‡Honorary Membe
†Complimentary Members *Junior Members **Family Members

Note: The year from which dates continuous membership is given in parenthesis aft each name.

ABADY, Carl F., US 52230466, Co. U, 5th Ord. Tng. Bn., ORTC, Aberdeen Proving Ground, Md. (1951)
ABBOTT, Charles C., Harvard Univ., Grad. Sch. of Bus. Admin., Soldiers Field, Boston, Mass. (1928)
ABBOTT, Edith, Hull House, 800 S. Halsted St., Chicago 7, Ill. (1905)
*ABBOTT, Edward L., 1652 Neil Ave., Columbus 1, Ohio. (1953)
ABBOTT, Lawrence, 26 Silver St., South Hadley, Mass. (1945)
ABBOTT, Roy T., 1205 Powhatan St., Alexandria, Va. (1944)
ABBOTT, William J., Jr., 401 Delshire Pl., Kirkwood 22, Mo. (1939)
ABEL, Kenneth N. K., 9202 Worth Ave., Silver Spring, Md. (1944)
ABLAHAT, Newton A., 3200 16th St., N.W., Washington 10, D.C. (1949)
ABNER, Carl E., Univ. of Louisville, Dept. of Econ. and Com., Louisville 8, Ky. (1948)
ABRAHAM, William I., Statis. Office, United Nations, N.Y. (1948)
ABRAHAMSON, Albert, 76 Federal St., Brunswick, Me. (1927)
ABRAMOVITZ, Moses, 543 W. Crescent Dr., Palo Alto, Calif. (1936)
*ABRAMS, Alice R., 90 Riverside Dr., New York 24, N.Y. (1952)
ABRAMSON, Adolph G., 436 Roslyn Ave., Glenside, Pa. (1942)
ABT, Seymour T. R., 2703 Spencer Rd., Chevy Chase 15, Md. (1948)
ACHENBAUM, Alvin A., 147-06 76th Ave., Kew Gardens Hills, Flushing 67, N.Y. (1952)
ACHINSTEIN, Asher, 108 Battery Lane, Bethesda, Md. (1922)
ACKERMAN, George F., 33 Ross Ave., Hackensack, N.J. (1946)
ACKERMAN, Sol, 230 Juniper, Park Forest, Chicago Heights, Ill. (1944)
ACKLEY, Gardner, 850 Heather Way, Ann Arbor, Mich. (1938)
ADAIR, Robert E., 57A 46th St., Weehawken, N.J. (1952)
ADAMS, Arthur B., Univ. of Oklahoma, Norman, Okla. (1923)
ADAMS, (Mrs.) Doris G., 1630 R St., N.W., Apt. 728, Washington, D.C. (1951)
ADAMS, E. Sherman, Pequot Dr., East Norwalk, Conn. (1948)
*ADAMS, F. Gerard, 8265 Park St., Saginaw 15, Mich. (1953)
ADAMS, George P., Jr., Cornell Univ., Dept. of Econ., Ithaca, N.Y. (1938)
ADAMS, Ira G., P.O. Box 1587, College Station, Tex. (1945)
ADAMS, John F., Temple Univ., Sch. of Bus. and Pub. Admin., Philadelphia 22, Pa. (1947)
ADAMS, Leonard P., Warren Rd., R.D. 1, Ithaca, N.Y. (1930)
ADAMS, Leonard W., Syracuse Univ., Sch. of Bus. Admin., Syracuse, N.Y. (1927)
ADAMS, Lewis W., Washington and Lee Univ., Newcomb Hall, Lexington, Va. (1949)
ADAMS, Quincy, 3321 R St., N.W., Washington 7, D.C. (1941)
ADAMS, Robert W., 179 Washington Ave., Garden City, N.Y. (1946)
ADAMS, Thomas C., 1831 San Juan Ave. Berkeley 7, Calif. (1948)
ADAMS, Thomas C., 242 S. 12th East St., Salt Lake City, Utah. (1929)
ADAMS, Walter, Michigan State Col.' Dept. of Econ., East Lansing, Mich. (1946)
ADAMS, Walter B., 4315 Regent St., Duluth, Minn. (1947)
ADAMS, Walter W., 826 S. Park, Saginaw, Mich. (1948)
ADAMSON, Raymond K., 27476 Sunnydale, Livoni Mich. (1934)
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ADDAHR, Nafi-Sayem, Ansari, Aleppo, Syria. (1949)
ADDINGTON, Harold E., Syracuse Univ., Sch. of Jou Syracuse, N.Y. (1946)
ADELMAN, Morris A., Massachusetts Inst. of Tec Dept. of Econ., Cambridge 39, Mass. (1945)
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AKERMAN, Clement, R. 2, Washougal, Wash. (19
AKTAN, Resat, Kocatepe Hatay S 26, Yenisehir-A kara, Turkey. (1949)
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ALAVI, Hamza A., c/o Inst. of Bankers in Pakist Imperial Bank of India Bldg., Mcleod Rd., Karac Pakistan. (1948)
ALBER, Charlotte A., 555 W. 174th St., New York N.Y. (1952)
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*ALBERT, Floyd B., 1421 Mamaroneck Ave., Apt. Mamaroneck, N.Y. (1951)
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ALEKSANDROWICZ, Ignacy, Hobart Col., Gene N.Y. (1947)
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LLIN, Bushrod W., U. S. Dept. of Agric., Outlook and Situation Bd., Washington, D.C. (1948)
LONSO Y PRIETO, Rafael, Apdo. Postal 1526, Monterrey, N.L., Mexico. (1949)
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ARNOLDS-PATRON, Paul, Col. of the Ozarks, Clarksville, Ark. (1942)
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ARTEAGA Y ORTEGA, José, Carmen No. 157 entre Monte y Tenerife, Havana, Cuba. (1952)
ARTH, Maurice P., Exec. Office of the Pres., Office of the Dir. for Mutual Sec., Washington 25, D. C. (1949)
ARTHUR, Henry B., Swift & Co., Gen. Office, U Stock Yards, Chicago, Ill. (1940)
ARTHUR, I. W., Iowa State Col., Econ. Dept., A Iowa. (1946)
ASCHER, Leonard, 34 Panoramic Way, Berk Calif. (1951)
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*BARRY, Thomas W., 19 Wilder Rd., R.F.D., Rockland, Mass. (1952)
BARTCH, Carl E., Third Secy. at Caracas, Venezuela, c/o Dept. of State, Washington 25, D.C. (1952)
BARTLETT, Roland W., 219 New Agric. Bldg., Urbana, Ill. (1931)
BARTON, Hubert C., 1530 Mt. Eagle Pl., Parkfairfax, Alexandria, Va. (1952)
BARTON, Sam B., Box 6015, T. C. Sta., Denton, Tex. (1947)
¶BARUCH, B. M., 597 Madison Ave., New York, N.Y. (1913)
BARUCH, Maurice J., 3914 Wabash Ave., Baltimore 15, Md. (1950)
BASCH, Antonin, Int. Bank for Recon. and Dev., 1818 H St., N.W., Washington 6, D.C. (1940)
BASHEIN, Henry S., 1804 N. Oak St., Arlington, Va. (1952)
*BASIL, Douglas C., 529 N. 13th St., Milwaukee 3, Wis. (1952)
BASKA, Louis M., St. Benedicts Col., Atchison, Kans. (1935)
BASKIN, Carlisle W., Randolph-Macon Col., Ashland, Va. (1950)
BASS, Frank M., Univ. of Illinois, 404 David Kinley Hall, Urbana, Ill. (1952)
**BASSIE, V. Lewis, 1209 W. University Ave., Champaign, Ill. (1946)
BASTER, James, United Nations, Dept. of Econ. Affairs, Lake Success, N.Y. (1947)
BASTYR, George P., Duquesne Univ., Pittsburgh 19, Pa. (1951)
BATCHELOR, Joseph A., Indiana Univ., Dept. of Econ., Bloomington, Ind. (1932)
BATES, Emmert W., American Book Co., 55 Fifth Ave., New York 3, N.Y. (1946)
BATOR, Francis M., 21 Robinson St., Cambridge, Mass. (1949)
*BATTAGLIA, Camille, 96 Crescent Pl., Yonkers, N.Y. (1952)
BATTES, Robert A., 969 Juniper Rd., Hellertown, Pa. (1949)
BATTS, Nathalie C. (Mrs. Walter), 20-15 24th St., Apt. 2B, Astoria 5, L.I., N.Y. (1949)
BAUDE, Walter A., Univ. of Cincinnati, Col. of Bus. Admin., Cincinnati 21, Ohio. (1947)
BAUDER, Russell S., Univ. of Missouri, 107 B. and P. A. Bldg., Columbia, Mo. (1947)
BAUER, John, American Pub. Util. Bur., 280 Broadway, New York, N.Y. (1910)
BAUER, Joseph J., 1023 Cross Dr., Overlook Ter., Alexandria, Va. (1947)
BAUER, Milton F., Brandon Col., Brandon, Man., Canada. (1951)
BAUER, Robert W., State of Calif. Dept. of Soc. Welfare, Sacramento, Calif. (1947)
BAUGH, Russell H., Oklahoma A. and M. Col., Dept. of Econ., Stillwater, Okla. (1932)
BAUGHN, W. H., Louisiana State Univ., Dept. of Bus. Admin., Baton Rouge 3, La. (1950)
BAUK, Herbert, 3225 23rd St., S.E., Washington, D.C. (1939)
BAUM, Warren C., 10514 Bucknell Dr., Silver Spring, Md. (1948)
BAUMBACH, Bernard C., Texas Lutheran Col., Sequin, Tex. (1951)
BAUME, Alfred H., Ford Motor Co., Econ. Anal. Dept., Dearborn, Mich. (1949)
BAUMERT, Watson A., 102 South Ave., Garden City, L.I., N.Y. (1927)
BAUMOL, William J., Princeton Univ., Dept. of Econ. and Soc. Sci., Princeton, N.J. (1949)
¶BEACH, Earl F., McGill Univ., Arts Bldg., Montreal, Que., Canada. (1946)
BEACH, W. Edwards, 5719 Chevy Chase Pkwy., Washington, D.C. (1926)
BEADLES, Nicholas A., 288 Kenilworth Rd., Asheville, N.C. (1945)
BEADLES, William T., Illinois Wesleyan Univ., Dept. of Econ., Bloomington, Ill. (1931)
BEALE, John W., Princess Anne, Va. (1946)
BEALL, John W., 124 Elm, Oberlin, Ohio. (1949)
BEAN, Louis H., 3714 N. Randolph St., Arlington, Va.

BEARD, Ralph, 228 Arlington St., Youngstown, Ohi (1948)
BEARNSON, J. B., Univ. of Utah, Salt Lake City Utah. (1939)
BEATTIE, John R., Bank of Canada, Ottawa, On Canada. (1946)
BEATTY, Sister M. Alexine, Regis Col., Weston 9 Mass. (1947)
BEATTY, Willard C., 42 Yale Ave., Gaspee Platea Providence 5, R.I. (1923)
BEBERFALL, Elmer H., 172 E. 4th St., New York N.Y. (1949)
BECK, Morris, 77 Watson Ave., East Orange, N (1947)
BECKER, A. P., Milwaukee Ext. Div., Univ. of W consin, 623 W. State St., Milwaukee 3, Wis. (1944
BECKER, James F., 329 E. 17th St., New York N.Y. (1950)
BECKER, Joseph M., St. Louis Univ., 221 N. Gra Blvd., St. Louis 3, Mo. (1946)
BECKER, Nathan M., 6 Leewood Circle, Tuckah N.Y. (1936)
BECKER, W. G., 1654 N. Johnson St., South Be Ind. (1948)
BECKERLE, Val J., 3674 Lindell, St. Louis, Mo. (19
BECKETT, Grace L., Univ. of Illinois, Dept. of Eco 323 David Kinley Hall, Urbana, Ill. (1936)
BECKHART, Benjamin H., Vassar Col., Box Poughkeepsie, N.Y. (1922)
BECKMAN, Theodore N., Ohio State Univ., Col. Com. and Admin., Columbus 10, Ohio. (1921)
BECKNER, Earl R., 3319 Legation St., N.W., Washi ton 15, D.C. (1924)
BECKWITH, Burnham P., 2110 Catalina St., Lagu Beach, Calif. (1949)
BEDFORD, Jimmy B., Memphis, Mo. (1952)
BEEBE, Richard M., Box 726 C.S., Pullman, Wa (1951)
BEECROFT, Eric, Int. Bank for Recon. and De Loan Dept., 1818 H St., N.W., Washington 25, D. (1943)
BEEDE, Kenneth C., Mexico City FSS, For. Serv., M Room, Dept. of State, Washington, D.C. (1939)
BEEM, Eugene R., Kalamazoo Col., Econ. Dep Kalamazoo, Mich. (1948)
BEETHAM, Robert C., Green Brook Rd., R.F.D. Bound Brook, N.J. (1948)
BEGANDO, Joseph S., Univ. of Kansas, Sch. of Bu Lawrence, Kans. (1951)
BEGGS, Donald E., Jr., 111 Baltimore Rd., Alexandr Va. (1951)
BEGLEY, John P., Creighton Univ., Omaha, N (1946)
BEHLING, Burton N., 4447 Davenport St., N.V Washington, D.C. (1934)
BEHLOW, Robert R., U. S. Bur. of Labor Statis., 3 Ninth Ave., New York 1, N.Y. (1942)
BEHR, Armin, US 51119585, 8th Ordnance M M C APO 46, c/o Postmaster, New York, N.Y. (1952)
BEHRENDT, Richard F. W., United Nations, Gr Hotel del Paraguay, Casilla 224, Asuncion, Paragua (1942)
BEIN, Donald H., 506 W. Apple Tree Rd., Milwauk 9, Wis. (1953)
BEKENSTEIN, Arthur L., 677 West End Ave., N York, N.Y. (1953)
BEKKER, Konrad, New Delhi, FSR, Dept. of Sta Washington 25, D.C. (1939)
BÉLANGER, Marcel, 325 Blvd. Charest, Quebec, Qu Canada. (1949)
BELCHER, David W., Univ. of Wisconsin, Sch. Com., Madison, Wis. (1947)
BELCHER, Donald R., 550 Prospect St., Westfield, N (1921)
BELCHER, Marjorie S., 2700 Que St., N.W., Apt. 2 Washington 7, D.C. (1949)
BELFER, Nathan, Pennsylvania State Col., Dept. Econ., State College, Pa. (1947)
BELFIGLIO, Ralph A., 2808 Horlacher St., Dayton Ohio. (1950)
BELL, Albert L., Franklin and Marshall Col., Dept. Com., Lancaster, Pa. (1942)
BELL, David E., 4803 Butterworth Pl., Washington D.C. (1941)
BELL, Edward L., R.F.D. 3, Hambrick Rd., Stone Mo tain, Ga. (1952)
BELL, Gordon D., 2904 W. 28th Ave., Vancouver, B.

:LL, Harry P., Dartmouth Col., Dept. of Econ., Hanover, N.H. (1945)
:LL, James Washington, 1745 Chicago Ave., Evanston, Ill. (1916)
:LL, John F., Univ. of Illinois, 318 David Kinley Hall, Urbana, Ill. (1927)
:LL, Lawrence J., 6117 Columbia Ave., Philadelphia 31, Pa. (1947)
:LL, Philip W., 218B Harrison St., Princeton, N.J. (1947)
:LL, Spurgeon, 532 20th St., N.W., Washington, D.C. (1925)
:LL, William J., 330 University Apts. E, 1605 E. Third St., Bloomington, Ind. (1943)
ELLA, Salvatore J., Alfred Univ., Dept. of Bus., Alfred, N.Y. (1948)
:LLEMORE, Douglas H., Boston Univ., 685 Commonwealth Ave., Boston, Mass. (1947)
ELLER, William C., 18 W. 85th St., New York 24, N.Y. (1937)
ELMONTE, Robert A., 33 Highland St., Framingham, Mass. (1952)
:LMORE, Carl W., 23 Yale Ave., Wakefield, Mass. (1936)
ELSHAW, Michael, 190 W. 10th St., New York 14, N.Y. (1953)
:LTRAN, Pedro G., Apartado 485, Lima, Peru. (1938)
:NATAR, Lewis C., 74 Hilltop Acres, Yonkers 4, N.Y. (1949)
:NDER, Wesley C., Univ. of Notre Dame, Notre Dame, Ind. (1937)
:NEDICT, Murray R., Univ. of California, Giannini Found., Berkeley, Calif. (1928)
:NEWITZ, Maurice C., 3133 James Ave., S., Minneapolis 8, Minn. (1950)
ENJAMIN, Arthur, 1212 Grand Concourse, New York 56, N.Y. (1950)
:NJAMIN, Harold, 141-68 85th Rd., Jamaica 35, N.Y. (1945)
:NNER, Claude L., Continental American Life Ins. Co., 2024 du Pont Bldg., Wilmington, Del. (1922)
:NNETT, Howard F., Northwestern Univ., Sch. of Com., Evanston, Ill. (1947)
:NNETT, Jack F., 414 High St., Chevy Chase 15, Md. (1950)
:NNETT, Merrill K., Food Res. Inst., Stanford Univ., Stanford, Calif. (1945)
NNETT, Philip A., 150 N. Day St., Orange, N.J. 1936)
NNETT, Rollin F., 58 Engle St., Cresskill, N.J. 1952)
NNETT, Virgil E., Bennett & Co., 200 Beaver St., Beaver, Pa. (1936)
NNETT, William B., 1345 Annandale Rd., Falls Church, Va. (1947)
NNETT, William R., P.O. Box 1896, University, Ala. (1948)
NNETT, William W., Union Col., Schenectady, N.Y. (1921)
NNION, Edward G., Standard Oil Co. of N.J., Econ. Dept., 30 Rockefeller Plaza, New York, N.Y. 1941)
NNSKY, George M., Jr., U. S. Treas. Dept., Office of Int. Fin., British Com. and M. E. Div., Washington 5, D.C. (1952)
NO, Jan, 831 Fairview Ave., Takoma Park, Md. 1948)
NOIT-SMULLYAN, Emile, MEC Vienna, Austria, APO 777, c/o Postmaster, New York, N.Y. (1942)
NSON, Charles S., 45 McKeen Dr., Brunswick, Me. 1947)
NSON, George C. S., 300 E. 9th St., Claremont, Calif. (1946)
:NSON, Wilbur E., 417 37th Pl., S.E., Washington, D.C. (1953)
RANEK, William, 6120 Yarmouth Ave., Reseda, Calif. (1949)
REND, Karl H. B., 2222 Charleston Pl., Hyattsville, Md. (1950)
RETVAS, Andor, 6832 S. Paxton Ave., Chicago 49, Ill. (1947)
RG, Joseph, 7562 8th St., N.W., Washington, D.C. 1951)
RG, Sherwood O., Belgrade Econ. Off. (Agric.), Dept. of State, Washington 25, D.C. (1949)
RGER, Adolph O., 244 Hazel St., Glencoe, Ill. (1934)
RGER, Florence B., 3733 Laurel Ave., Brooklyn 24,

BERGER-VOESENDORF, Alfred V., c/o Riggs Nat. Bank, Pennsylvania Ave., Washington 13, D.C. (1949)
BERGREEN, Sholem, 606 Galveston St., S.E., Washington 20, D.C. (1949)
BERGSON, Abram, 35 Claremont Ave., New York 27, N.Y. (1937)
BERKE, Leonard M., 2112 Shepherd St., N.E., Washington 18, D.C. (1942)
BERKOWITZ, Bernard, 4923 Deal Dr., Washington 20, D.C. (1949)
BERKOWITZ, Monroe, 839 Hawthorne Ave., Bound Brook, N.J. (1945)
BERLINER, Joseph S., Harvard Univ., Russian Res. Center, Dudley Hall, Cambridge, Mass. (1952)
BERMUDEZ, Jorge, Italia and San Miguel Sts., Ocean Park, Santurce, P.R. (1932)
*BERNAT, John A., R.D. 4, Box 337, Latrobe, Pa. (1952)
BERNAUT, Roman, 41 Fifth Ave., New York 3, N.Y. (1948)
BERNDT, Rexer, 606 E. 11th St., Ottawa, Kans. (1949)
BERNFIELD, Frederick M., Benning Hall, 3445 38th St., N.W., Washington 16, D.C. (1937)
§BERNHARDT, Joshua, 6800 Brookville Rd., Chevy Chase 15, Md. (1920)
BERNHEIM, George B., 300 Observer Highway, Hoboken, N.J. (1916)
BERNSTEIN, Edward M., 400 Elm St., Chevy Chase 15, Md. (1935)
BERNSTEIN, Irving, Univ. of California, Inst. of Ind. Rela., Los Angeles 24, Calif. (1948)
BERNSTEIN, Leonard A., 2078 Bayridge Pkwy., Brooklyn, N.Y. (1950)
BERNSTEIN, Martin, 288 E. 168th St., New York, N.Y. (1947)
BERNSTEIN, Peter L., 72-15 37th Ave., Jackson Heights, N.Y. (1949)
BERNSTEIN, Rosalie, 419 Sterling Ct., Madison, Wis. (1949)
BERNSTEIN, (Mrs.) Sylvia P., 3300 Buchanan St., Mt. Rainier, Md. (1944)
BERNT, H. H., College Apts. B-2, Elmira, N.Y. (1943)
BERRA, Lubio R., 223 E. 40th St., Apt. 1, New York 16, N.Y. (1952)
BERRIDGE, William A., Metropolitan Life Ins. Co., 1 Madison Ave., New York 10, N.Y. (1921)
BERRY, Robert E., Miami Univ., Dept. of Econ., Oxford, Ohio. (1948)
BERRY, Thomas S., 2514 Staples Mill Rd., Richmond 28, Va. (1933)
BERTODATTO, Henry, Bowling Green State Univ., Dept. of Econ., Bowling Green, Ohio. (1951)
BERTRAM, Rudolf F., 2843 Woodbine Ave., Knoxville, Tenn. (1937)
BERTRAND, Raymond, c/o OEEC, 2 rue Andre Pascal, Paris 16, France. (1948)
BESSE, Clifford S., Xavier Univ., Evanston Sta., Cincinnati 7, Ohio. (1949)
BETHKE, Robert H., Discount Corp. of N.Y., 58 Pine St., New York 5, N.Y. (1947)
BETHKE, William, La Salle Ext. Univ., 417 S. Dearborn St., Chicago 5, Ill. (1919)
*BETTS, James W., 1547 Ala Wai Blvd., Honolulu, Hawaii. (1952)
BETTY, Sam M., 63 S. McGregor Ave., Spring Hill, Ala. (1947)
BEULOW, Bertha E., Youngstown Col. Lib., 410 Wick Ave., Youngstown 3, Ohio. (1952)
‡BEVERIDGE, William H., First Baron of Tuggal, Tuggal Hall, Chathill, Northumberland, England. (1945)
BEYER, Glenn H., 221 Bryant Ave., Ithaca, N.Y. (1945)
BEZANSON, Anne, 3440 Walnut St., Room 26, Philadelphia, Pa. (1918)
BIALECKI, Henry, 487 East St., New Haven 11, Conn. (1949)
BIANCHI, Renzo, Carleton Col., Northfield, Minn. (1946)
BICKLEY, John S., Ohio State Univ., Col. of Com. and Admin., Columbus 10, Ohio. (1952)
BIDGOOD, Lee, University, Ala. (1911)
BIEBER, George D., Eastern Gas and Fuel Asso., 250 Stuart St., Boston 16, Mass. (1941)

BIEDERMANN, Carl, 1825 New Hampshire Ave., N.W., Apt. 812, Washington, D.C. (1952)
BIGELOW, Howard F., Western Michigan Col. of Educa., Kalamazoo, Mich. (1927)
BIGELOW, Robert L., 1009 River Rd., Maumee, Ohio. (1949)
BIGGS, Robert M., 16639 Stoepel, Detroit 21, Mich. (1941)
BIGLER, Eugene, 210 Highland Ave., Kent, Ohio. (1949)
BIGLER, William R., 86 Highland Ave., Columbus, Ohio. (1946)
**BILKEY, Angelica (Mrs. Warren J.), Univ. of Connecticut, Dept. of Econ., Storrs, Conn. (1950)
BILKEY, Warren J., Univ. of Connecticut, Dept. of Econ., Storrs, Conn. (1948)
BILLINGS, Arthur G., Delphos, Kans. (1940)
BILLINGS, Elden E., 3313 Que St., N.W., Washington 7, D.C. (1946)
BILLINGTON, Wilbur T., Fed. Res. Bank, Res. Dept., Kansas City, Mo. (1946)
BIMBAS, Demetre, Amaryillidos St., Psychico, Athens, Greece. (1949)
*BINENSTOCK, Morton M., 155 Lehigh Ave., Newark 8, N.J. (1949)
¶BING, Alexander M., 18 E. 48th St., New York, N.Y. (1919)
BING, Ralph A., c/o Sutro & Co., 407 Montgomery St., San Francisco, Calif. (1946)
BINGHAM, Vernon A., 7201 Fifth Ave., Kenosha, Wis. (1943)
BINKLEY, Howard L., P.O. Box 201, Hanover, Ind. (1949)
BIRD, Francis H., Univ. of Cincinnati, Col. of Bus. Admin., Cincinnati 21, Ohio. (1909)
BIRDZELL, Ruth A., 511½ W. Vine St., Champaign, Ill. (1948)
BISBING, Leonard J., 2416 S. 52nd St., West Allis 14, Wis. (1948)
BISHOP, Donald F., 1500 Walnut St., Philadelphia 2, Pa. (1950)
*BISHOP, Edward R., 931 G Pl., N.W., Washington, D.C. (1952)
BISHOP, Philip W., Athens, MSA, c/c Dept. of State, Washington 25, D.C. (1940)
BISHOP, Robert L., Massachusetts Inst. of Tech. 1-279, Cambridge, Mass. (1946)
BISHOP, Ward L., 516 Warner Ave., Los Angeles, Calif. (1952)
BISSELL, Richard M., Jr., 1705 Hoban Rd., N.W., Washington 7, D.C. (1936)
BITTERMANN, Henry J., Treas. Dept., Office of Int. Fin., Washington 25, D.C. (1928)
*BIVEN, William C., 3689 W. Pine Blvd., St. Louis 8, Mo. (1951)
BLACK, Albert G., R.F.D. 1, Staunton, Va. (1925)
BLACK, Guy, Univ. of California, Col. of Agric., Berkeley, Calif. (1948)
BLACK, John D., Harvard Univ., Littauer Sch. of Pub. Admin., Cambridge, Mass. (1919)
BLACKBURN, Burr, Household Fin. Corp., 919 N. Michigan Ave., Chicago, Ill. (1929)
BLACKBURN, Raymond F., Univ. of Pittsburgh, Sch. of Bus. Admin., Pittsburgh 13, Pa. (1939)
BLACKMAN, Herbert H., 7004 Wilson Lane, Bethesda 14, Md. (1948)
BLACKMAN, James H., Johns Hopkins Univ., Dept. of Polit. Econ., Baltimore 18, Md. (1948)
BLACKMAN, John L., Jr., 2800 Quebec St., N.W., Apt. 232, Washington, D.C. (1948)
BLADEN, Vincent W., Univ. of Toronto, 273 Bloor St. W., Toronto, Ont., Canada. (1924)
BLAINE, Mrs. Emmons, 101 E. Erie St., Chicago 11, Ill. (1910)
BLAINE, James C. D., Greenwood Rd., Chapel Hill, N.C. (1947)
BLAIR, Jacob J., 765 Gypsy Lane, Mt. Lebanon, Pittsburgh 34, Pa. (1935)
BLAIR, John M., 3010 Crest Ave., Cheverly, Md. (1944)
BLAISDELL, Philip H., 113 Martha Rd., Hollin Hills, Alexandria, Va. (1946)
BLAKE, Archie, 4071 S. Harlem Rd., Buffalo 21, N.Y. (1946)
*BLAKE, Harlan M., Judd Hall, Room 13, 5835 Kimbark Ave., Chicago 37, Ill. (1950)
BLAKEY, Roy G., U. S. Embassy, APO 206-A, c/o Postmaster, New York, N.Y. (1912)

BLANCATO, Alfred F., 8612 18th Ave., Brooklyn N.Y. (1946)
BLANCHARD, Ralph H., Columbia Univ., Sch. Bus., New York 27, N.Y. (1912)
BLANCHET, Jules, 1712 16th St., N.W., Washingto D.C. (1952)
BLANK, David, 178 Liberty Rd., Englewood, N (1946)
BLASER, Arthur F., Jr., "Renfrew," R. 1, Alexand Va. (1940)
BLAU, Gerda J., F.A.O., Viale delle Terme di Caraca Rome, Italy. (1947)
BLAUG, Mark, 53 Gt. Ormond St., London, W.C. England. (1952)
BLEICH, Edmund, P.O. Box 544, Tappan, N (1953)
BLISS, Charles A., Lincoln, Mass. (1928)
BLISS, Perry, Univ. of Buffalo, Sch. of Bus. Adm Buffalo 14, N.Y. (1951)
BLITMAN, Samuel, 4133 N. Henderson Rd., Arlingt Va. (1946)
BLITZ, Rudolph C., Northwestern Univ., Dept. Econ., Evanston, Ill. (1952)
BLOCH, Ernest, 229 E. 21st St., New York 10, N (1948)
BLOCH, Henry S., 123-35 82nd Rd., Apt. 6K, K Gardens, L.I., N.Y. (1938)
BLOCH, Herman D., 585 Atlantic St., Bridgeport Conn. (1946)
BLOCH, Max, 84-16 Elmhurst Ave., Apt. 6-B, E hurst, N.Y. (1948)
BLOCK, Herbert, 3613 Gunston Rd., Parkfairl Alexandria, Va. (1941)
BLODGETT, Ralph H., Univ. of Florida, Dept. Econ., Gainesville, Fla. (1935)
BLOMBERG, Chester L., 102 Chesnut St., Rutl ford, N.J. (1943)
BLOMGREN, Paul B., 1202 Maxwell Lane, Bloomi ton, Ind. (1953)
BLOMQUIST, Howard W., 4016 Travis. Apt. 1 Dallas, Tex. (1952)
BLOODGOOD, Willard, Allegheny Col., Meadvill Pa. (1949)
BLOOM, Adele, 50 Washington Ave., Cedarhurst, N (1948)
BLOOM, Clark C., Univ. of Iowa, 301D Univer Hall, Iowa City, Iowa. (1951)
BLOOM, Max R., 6821 Laverock Ct., Bethesda Md. (1940)
BLOOMBERG, Lawrence N., Pub. Hous. Auth., Lo fellow Bldg., Washington, D.C. (1935)
BLOOMFIELD, Arthur I., 33 Liberty St., New Y N.Y. (1938)
BLOOMFIELD, Daniel, Boston Conf. on Dist., Federal St., 14th Floor, Boston, Mass. (1934)
§BLOUGH, Roy, 325 E. 41st St., Apt. 907, New Y 17, N.Y. (1924)
BLOUNT, Gerald R., Jr., 1711 Massachusetts A N.W., Apt. 525, Washington, D.C. (1951)
BLUM, Fred H., 2728 Benvenue Ave., Berkeley Calif. (1946)
BLUM, Robert, 1217 Rippon Rd., Hollin Hills, A andria, Va. (1947)
*BLUMBERG, Lionel J., 1326 E. 57th St., Chicago Ill. (1951)
*BLUMENTHAL, Werner M., 225-A Harrison Princeton, N.J. (1952)
BOALS, Gordon P., 3201 36th St., N.W., Washin 16, D.C. (1929)
*BOAN, J. A., 1550½ Hunter Ave., Columbus 1, O (1953)
BOATWRIGHT, John W., P.O. Box S, 910 S. Michi Ave., Chicago, Ill. (1931)
BOBBITT, Pearl B., 1135 Potomac Ave., Hagerstc Md. (1947)
BOBER, Mandell M., Lawrence Col., Appleton, (1927)
BOBER, William C., Johns Manville Corp., 22 E. St., New York, N.Y. (1939)
BODANSKY, Harry, 10707 St. Margaret's Way, Si Spring, Md. (1947)
BODDIE, John, 4215 Leland St., Chevy Chase Md. (1950)
BODDY, Francis M., Univ. of Minnesota, Sch. of I Admin., Minneapolis 14, Minn. (1934)
BODENHORN, George D., RAND Corp., 1625 St., N.W., Washington 6, D.C. (1948)

)DFISH, Morton, 221 N. La Salle St., Chicago, Ill. (1926)
)EDECKER, Karl A., Michigan State Col., Div. of Bus. Admin., East Lansing, Mich. (1948)
)EHMLER, Erwin W., Invest. Bankers Asso. of America, 33 S. Clark St., Room 1537, Chicago 3, Ill. (1939)
)ETTLER, Herbert F., First Nat. Bank, St. Louis 2, Mo. (1922)
OGART, Ernest L., 25 W. 10th St., New York 11, N.Y. (1897)
)GEN, Jules I., 315 W. 106th St., New York, N.Y. (1931)
)HAN, Richard T., 306 E. Ewing St., South Bend, Ind. (1938)
)HLMAN, Herbert W., 1301 37th St., Des Moines, Iowa. (1924)
)HN, Carl, 331 Bement Ave., Staten Island 10, N.Y. (1936)
)HR, Kenneth A., 112 W. Greenway Blvd., Falls Church, Va. (1950)
)LDEN, Norman R., 879 Park Pl., Brooklyn 16, N.Y. (1932)
)LLINGER, W. La Mar, Col. of Idaho, Caldwell, Idaho. (1947)
)NBRIGHT, James C., Columbia Univ., Sch. of Bus., New York 27, N.Y. (1915)
)ND, Donald H., 1112 Edison Ave., Sunnyside, Wash. (1951)
)ND, Floyd A., Pomona Col., Dept. of Econ., Claremont, Calif. (1939)
)NDE, Ruth L., Northwestern Univ., 318 Fisk Hall, Evanston, Ill. (1941)
)NER, J. Russell, 10102 Georgia Ave., Silver Spring, Md. (1937)
)NNELL, Allen T., Wallingford, Pa. (1936)
)NNELL, Elwyn T., 5816 Ipswich Rd., Bethesda 14, Md. (1947)
3ONNELL, Virginia C. (Mrs. Elwyn T.), 5816 Ipswich Rd., Bethesda 14, Md. (1948)
)OKBINDER, Albert I. A., 119–21 222nd St., Cambria Heights 11, N.Y. (1945)
)OKBINDER, Hyman H., 347 Southampton Dr., Silver Spring, Md. (1948)
)ONE, Gladys, Sweet Briar Col., Sweet Briar, Va. (1928)
)OTH, S. Lees, 4604 28th Rd., Apt. 1, Claremont Community, Arlington, Va. (1947)
)OTHE, Viva, Ohio State Univ., Bur. of Bus. Res., Columbus, Ohio. (1941)
)PP, Karl R., Fed. Res. Bank, 925 Chestnut St., Philadelphia, Pa. (1936)
)RAK, Arthur M., Univ. of Minnesota, Sch. of Bus. Admin., Minneapolis 14, Minn. (1927)
)RCHARDT, Harvard G., Box 293, R.R. 1, Excelsior, Minn. (1946)
)RDEN, Neil H., Morgan Hall, Soldiers Field, Boston, Mass. (1925)
)RDEN, Sidney, 26058 Wyoming Rd., Huntington Woods, Mich. (1947)
)RENDAME, James E., 409 Dodge Ave., Evanston, Ill. (1950)
)RENSTEIN, Balbina, 12 Sumner Rd., Cambridge, Mass. (1951)
ORIS, Jerome M., 4315 Chestnut St., Philadelphia 4, Pa. (1952)
)RKIN, Joseph, 1017 Ring Bldg., Washington 6, D.C. (1948)
)RNEMANN, Alfred, Norwich Univ., Northfield, Vt. (1939)
ORNSTEIN, Larry, Univ. of Connecticut, Dept. of Econ., Storrs, Conn. (1951)
)RNSTEIN, Morris, 18960 Ohio Ave., Detroit 21, Mich. (1950)
)RTH, Daniel, Jr., Louisiana State Univ., Office of Comptroller, Baton Rouge, La. (1935)
)RTS, George H., Brown Univ., Econ. Dept., Providence 12, R.I. (1948)
)RTZ, Nelson M., Old Georgetown Rd., R. 4, Rockville, Md. (1932)
BOSCHAN, Charlotte F. (Mrs. Paul), 104 W. 40th St., New York 18, N.Y. (1948)
)SCHAN, Paul, 104 W. 40th St., New York 18, N.Y. (1948)
)SLAND, Chelcie C., Brown Univ., Dept. of Econ., Providence, R.I. (1925)
)SS, Irwin S., 188-02 64th Ave., Apt. 12G, Flushing, N.Y. (1947)
BOSTOW, Lawrence, Bd. of Gov. of the Fed. Res. System, Div. of Int. Fin., Washington 25, D.C. (1952)
BOUDREAU, Henry C., 4225 N. 2nd Rd., Arlington, Va. (1950)
BOULDING, Kenneth E., Univ. of Michigan, Dept. of Econ., Ann Arbor, Mich. (1945)
BOUNIATIAN, Mentor, 88 rue du Bac, Paris 7, France. (1947)
BOURKE, Norman F., 155 Babbott Ave., Waterville, N.Y. (1949)
BOURNE, Howard A., Wayne Univ., Dept. of Econ., Detroit 1, Mich. (1947)
BOURNE, Raymond D., Box 109, Oxford, Ohio. (1948)
BOURNE, Richard M., Univ. of Nebraska, Col. of Bus. Admin., Lincoln, Neb. (1945)
BOURNE, William N., 34 Buckingham St., Cambridge 38, Mass. (1940)
*BOURQUE, Philip J., 685 W. Walnut Lane, Philadelphia 44, Pa. (1950)
BOUVIER, Emile, Ind. Res., 25 Jarry St. W., Montreal 14, Que., Canada. (1941)
BOVET, Eric D., 1502 Fort Hunt Rd., Tauxemont, Alexandria, Va. (1942)
BOWEN, Carter M., Ford Motor Co., Purch. Res. Dept., 3000 Schaefer Rd., Dearborn, Mich. (1950)
BOWEN, Charles, 328 E. Beecher, Jacksonville, Ill. (1951)
BOWEN, Howard R., Williams Col., Dept. of Econ., Williamstown, Mass. (1936)
BOWERS, Edison L., Ohio State Univ., Commerce Bldg., Columbus 10, Ohio. (1923)
BOWERS, Robert S., Western Michigan Col., Kalamazoo, Mich. (1947)
BOWERS, Russell, 659 Peachtree St., N.E., Atlanta, Ga. (1946)
BOWIE, Lloyd W., 518 W. Locust St., Davenport, Iowa. (1947)
BOWLER, John F., 4258 W. Adams St., Chicago 24, Ill. (1942)
‡BOWLEY, Arthur L., Univ. of London, London, England. (1932)
BOWMAN, Arthur C., Texas Mil. Inst., San Antonio, Tex. (1945)
BOWMAN, Dean O., 150 Font Blvd., Apt. 7-C, San Francisco 27, Calif. (1938)
BOWMAN, Jean C., 640 Mason St., San Francisco 2, Calif. (1946)
BOWMAN, Mary Jean, Univ. of Kentucky, Dept. of Soc., Lexington, Ky. (1934)
BOWMAN, Raymond T., 5109 Township Line Rd., Drexel Hill, Pa. (1929)
BOWMAN, Ward S., Jr., 1333 E. 50th St., Chicago 15, Ill. (1937)
BOWSHER, Norman N., 6019 Cascade Dr., Berkeley 21, Mo. (1949)
*BOX, J. Richard, Front St., Grand Rapids, Ohio. (1951)
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BOYD, Robert K., Pacific Union Col., Angwin, Calif. (1942)
BOYDEN, Theodore C., 4 Bond St., Cambridge 38, Mass. (1951)
BOYLE, Charles E., 429 Camp Ave., Braddock, Pa. (1950)
BOYNTON, Homer A., Jr. 279 S. Quaker Lane, West Hartford 7, Conn. (1951)
BRADBURD, Arnold W., Concord Col., Dept. of Bus. Educa. and Admin., Athens, W. Va. (1952)
BRADEN, Samuel E., Indiana Univ., Dept. of Econ., Bloomington, Ind. (1938)
BRADFORD, Ernest S., 50 Argyle Ave., New Rochelle, N.Y. (1943)
BRADFORD, Frederick A., Lehigh Univ., Col. of Bus. Admin., Bethlehem, Pa. (1923)
BRADFORD, William C., Northwestern Univ., Sch. of Com., Evanston, Ill. (1947)
BRADLEY, Harry R., 3583 Greenfield Ave., Los Angeles 34, Calif. (1952)
BRADSHAW, Frederic H., 403 N. Grove Ave., Oak Park, Ill. (1946)
BRADSHER, Julian H., Oklahoma A. and M. Col., Sch. of Com., Dept. of Econ., Stillwater, Okla. (1948)
BRADY, Robert A., Univ. of California, Dept. of Econ., Berkeley 4, Calif. (1945)
BRAINARD, Harry G., 135 Kensington Rd., East Lansing, Mich. (1935)

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BRANCH, Maurice L., 538 E. College Ave., Appleton, Wis. (1949)
BRAND, Michael, Univ. of New Mexico, Bur. of Bus. Res., Albuquerque, N.M. (1943)
BRAND, Willem, 2 E. Mill Dr., Bldg. 18, Apt. 3E, Great Neck, L.I., N.Y. (1949)
BRANDIS, Royall, Univ. of Illinois, Sch. of Com. and Bus. Admin., Dept. of Econ., Urbana, Ill. (1951)
BRANDT, Harry, 12 Monroe St., New York 2, N.Y. (1949)
BRANDT, Karl, Food Res. Inst., Stanford Univ., Stanford, Calif. (1951)
BRANN, William P., Swifton, Ark. (1944)
BRANNON, Gerard M., 705 Jefferson Ave., Falls Church, Va. (1944)
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BRATT, Elmer C., Lehigh Univ., Bethlehem, Pa. (1923)
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BRAY, James O., 825 Harris Ave., Manhattan, Kans. (1949)
BRAY, Warren C., 1158 Orlando Ave., Akron, Ohio. (1948)
BRAY, William H., American Embassy, The Hague, c/o Dept. of State, Washington 25, D.C. (1940)
BRAZEAL, Brailsford R., Morehouse Col., Atlanta, Ga. (1948)
BRAZER, Harvey E., Wayne Univ., Dept. of Econ., Detroit 1, Mich. (1947)
**BRAZER, Marjorie C. (Mrs. Harvey E.), Wayne Univ., Dept. of Econ., Detroit 1, Mich. (1950)
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BREAUX, Clarence T., Second Secy., Addis Ababa, Dept. of State, Washington 25, D.C. (1952)
BRECHT, Robert P., Univ. of Pennsylvania, Wharton Sch., Philadelphia, Pa. (1941)
BRECKENRIDGE, Walter N., Waterville, Me. (1929)
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BREDO, William, 234 Edlee Ave., Palo Alto, Calif. (1947)
BREHENY, John R., 227 High St., Keokuk, Iowa. (1951)
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BREIER, Frederick A., 120 Graystone, San Francisco, Calif. (1942)
BREKKE, Arnold, Univ. of California, Dept. of Econ., Geog., and Soc., Davis, Calif. (1949)
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BREMS, Hans, Univ. of California, Dept. of Econ., Berkeley 4, Calif. (1951)
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BREWER, John C., Kent State Univ., Kent, Ohio. (1946)
BREWSTER, Maurice R., 332 Garmon Rd., N.W., Atlanta, Ga. (1939)
BREYER, Ralph F., Univ. of Pennsylvania, Wharton Sch., Philadelphia, Pa. (1921)
BRICKMAN, Myrtle S. (Mrs. Harry), 9 Major Barbara St., R.R. 3, Alexandria, Va. (1949)
BRICKNER, Arthur, 77-34 113th St., Forest Hills, N.Y. (1943)
BRIEFS, Goetz A., 3704 Kenilworth Dr., Chevy Chase, Washington, D.C. (1938)
BRIEFS, Henry W., De Paul Univ., Econ. Dept., 2322 Kenmore Ave., Chicago 14, Ill. (1949)
BRIERS, James L., 2951 Neil Ave., Columbus 2 Ohio. (1950)
BRIGGS, Leland L., Univ. of Vermont, Dept. of Econ Burlington, Vt. (1925)
BRIGGS, Royal J., Superior State Col., Superior, Wi (1935)
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BRIGHT, Imogene, 3831 Porter St., N.W., Washingto 16, D.C. (1952)
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BRIMMER, Andrew F., Harvard Univ., 15-A Conar Hall, Cambridge, Mass. (1949)
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BRINEGAR, George K., Univ. of Connecticut, Dep of Agric. Econ., Storrs, Conn. (1947)
BRINKER, Walter E., Dept. of Soc. Sci., West Poin N.Y. (1951)
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BRISSENDEN, Paul F., Columbia Univ., New Yor 27, N.Y. (1921)
BRITTON, Virginia, 20 Plattsburg Ct., N.W., Washin ton, D.C. (1948)
BROCK, Leslie V., 1810 Dearborn, Caldwell, Idah (1936)
BROCKIE, Melvin D., 1626 N. Los Robles Ave Pasadena 6, Calif. (1947)
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BRODY, Stanley, Univ. of Minnesota, Centenni Hall, Minneapolis 14, Minn. (1949)
BROIDA, Arthur L., 207 Martha's Rd., Hollin Hill Alexandria, Va. (1947)
BROKAW, P. L., 713 Timber Branch Dr., Alexandri Va. (1947)
BRONFENBRENNER, Martin, Univ. of Wisconsi Dept. of Econ., Madison 6, Wis. (1938)
BRONSON, Howard C., 1368 Oak Lane, East Meadov L.I., N.Y. (1950)
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BROOKS, Thomas R., 191 Clinton St., Brooklyn N.Y. (1951)
BROOKSHIRE, (Mrs.) Marjorie S., 731 E. Lee, Ap D, Tucson, Ariz. (1949)
BROSSARD, Edgar B., U. S. Tariff Com., 7th and Sts., N.W., Washington, D.C. (1952)
BROUDE, Henry W., 106 Hancock St., Cambridge 3 Mass. (1949)
BROWER, Martin M., 30 Dongan Pl., New York 3 N.Y. (1950)
BROWN, A. B., Great-West Life Assur. Co., Winnipe Man., Canada. (1950)
BROWN, Bonnar, Stanford Res. Inst., Stanford, Cali (1938)
BROWN, Carl F., 9596 Brace, Apt. 110, Detroit 2 Mich. (1950)
BROWN, Cecil K., Davidson Col., Davidson, N.C (1928)
BROWN, Courtney C., 4 Kent Rd. Cor. Ogden Rd Scarsdale, N.Y. (1935)
BROWN, Donald M., Transp. Bldg., Dept. of High ways, Olympia, Wash. (1951)
BROWN, Douglas S., 2661 Hawthorne Rd., Ann Arbo Mich. (1944)
BROWN, Douglass V., 46 Griggs Rd., Brookline, Mas (1932)
BROWN, E. Cary, Massachusetts Inst. of Tech., Dep of Econ., Cambridge, Mass. (1947)
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BROWN, Elmer J., Univ. of Arizona, Tucson, Ari (1911)
BROWN, Elwood G., Walworth, N.Y. (1948)
BROWN, Emily C., Vassar Col., Poughkeepsie, N.Y (1927)
BROWN, Francis J., De Paul Univ., 64 E. Lake St Chicago, Ill. (1950)

BROWN, George H., Univ. of Chicago, Sch. of Bus., Chicago 37, Ill. (1940)
BROWN, George T., Garrett Park, Md. (1935)
BROWN, Gilbert T., West St., Middletown, Conn. (1953)
BROWN, Harry G., Univ. of Mississippi, Dept. of Econ. and Bus., University, Miss. (1909)
BROWN, Horace B., Jr., Univ. of Oklahoma, Col. of Bus. Admin., Office of the Dean, Norman, Okla. (1944)
BROWN, J. Douglas, Dean's House, Princeton N.J. (1925)
BROWN, James R., Fordham Col., Gov. Dept., New York 58, N.Y. (1949)
BROWN, Lathrop, Saddle Rock Ranch, Big Sur, Calif. (1921)
BROWN, Leo C., St. Louis Univ., 221 N. Grand Blvd., St. Louis 3, Mo. (1946)
BROWN, Mary V., 235 E. 50th St., New York, N.Y. (1944)
BROWN, Otis D., Box 223, Short Beach, Conn. (1948)
BROWN, Pembroke H., Univ. of Illinois, 109 Commerce Bldg., Urbana, Ill. (1917)
BROWN, Philip M., 3 Page St., Brunswick, Me. (1925)
BROWN, Philip S., R.F.D. 2, Box 560, Alexandria, Va. (1945)
BROWN, Ralph S., Jr., Yale Law Sch., 401A Yale Sta., New Haven, Conn. (1948)
BROWN, Richard L., 254 Harrison St., Passaic, N.J. (1948)
BROWN, Robert Lyle, c/o For. Serv. Mail Room, Dept. of State, Washington 25, D.C. (1951)
BROWN, Roger A., 2178 Wyandotte Ave., Lakewood 7, Ohio. (1953)
BROWN, Samuel L., 80 Avon Rd., R. 4, Rochester, Mich. (1948)
BROWN, Sidney, Box 441-D, R.D. 2, Nixon, N.J. (1948)
BROWN, Theodore H., Harvard Univ., Grad. Sch. of Bus. Admin., Soldiers Field, Boston 63, Mass. (1921)
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BROWN, William A., Jr., 1254 31st St., N.W., Washington 7, D.C. (1926)
BROWN, William C., 170-22 Henley Rd., Jamaica, N.Y. (1951)
BROWN, William F., Univ. of California, Col. of Bus. Admin., Los Angeles 24, Calif. (1945)
BROWN, William H., Jr., 435 Riverview Ave., Swarthmore, Pa. (1949)
BROWNE, E. Wayles, Jr., 8504 Irvington Ave., Bethesda 14, Md. (1949)
BROWNE, (Mrs.) Martha Steffy, 510 E. 23rd St., New York 10, N.Y. (1941)
BROWNE, Warren, 1725 Orrington Ave., Evanston, Ill. (1947)
BROWNLEE, O. H., Univ. of Minnesota, Sch. of Bus. Admin., Minneapolis 14, Minn. (1950)
BROZEN, Yale, Northwestern Univ., Tech. Inst., Evanston, Ill. (1941)
BRUHN, Mark C., North Central Col., Econ. Dept., Naperville, Ill. (1947)
BRUMBERG, Richard E., Johns Hopkins Univ., Dept. of Polit. Econ., Baltimore 18, Md. (1950)
BRUNNER, Edmund, Jr., 1214 Stafford Rd., Hollin Hills, Alexandria, Va. (1946)
**BRUNNER, Gerti L. (Mrs. Edmund, Jr.), 1214 Stafford Rd., Hollin Hill, Alexandria, Va. (1946)
BRUNO, Vincent J., 4747 E. Washington St., Indianapolis 1, Ind. (1943)
BRUSH, Waite S., 4 Irving Pl., Room 1673-S, New York, N.Y. (1940)
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BRY, Gerhard, 457 Richmond Ave., Maplewood, N.J. (1946)
BRYAN, Leslie A., 1016 W. John St., Champaign, Ill. (1929)
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BRYAN, William, Box 84, North End Sta., Detroit 2, Mich. (1951)
BRYANT, Lyle C., 904 N. Wayne St., Apt. 104, Arlington 1, Va. (1935)
**BRYANT, Mabelle (Mrs. Paul E.), 215 Professional Bldg., Charleston 1, W. Va. (1953)
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BRYCE, Robert B., 9 Belvedere Crescent, Ottawa, Ont., Canada. (1934)
BRYDE, Thomas J., 22 Concord Ave., Larchmont, N.Y. (1948)
BRYSKI, Anthony J., 16 Fairview Ave., Quakertown, Pa. (1947)
**BRYSON, Prima L. (Mrs. Winfred O., Jr.), 2416 Montebello Ter., Baltimore 14, Md. (1948)
BRYSON, Winfred O., Jr., 2416 Montebello Ter., Baltimore 14, Md. (1947)
BRZYSKI, Stanley B., 186 Second Ave., Troy, N.Y. (1947)
*BUCHALTER, Sol S., 762 Brady Ave., New York 60, N.Y. (1953)
BUCHAN, Leslie J., Washington Univ., Sch. of Bus. and Pub. Admin., St. Louis, Mo. (1940)
BUCHANAN, Daniel H., P.O. Box 424, Chapel Hill, N.C. (1929)
BUCHANAN, James M., Florida State Univ., Dept. of Econ., Tallahassee, Fla. (1942)
BUCHANAN, Norman S., Univ. of California, Dept. of Econ., Berkeley 4, Calif. (1930)
BUCK, Marion A., 177 Mullin St., Watertown, N.Y. (1950)
BUCK, Norman S., Yale Sta., New Haven, Conn. (1920)
BUCKBERG, Albert, 626 S. Division St., Ann Arbor, Mich. (1947)
BUCKINGHAM, Walter S., Jr., Georgia Tech., Sch. of Ind. Mgt., Atlanta, Ga. (1951)
BUCKLEY, Julian G., Cold Spring Harbor, L.I., N.Y. (1952)
BUCKLEY, Louis F., 1253 N. Central Ave., Chicago 51, Ill. (1939)
BUCKNAM, Roland F., 25B Old Hictory Dr., Albany 4, N.Y. (1940)
BUCKWALTER, W. Roy, Temple Univ., Sch. of Bus., Philadelphia 22, Pa. (1943)
BUDD, Edward C., Yale Univ., Dept. of Econ., New Haven, Conn. (1949)
BUDIN, Morris, Silverton Rd., Box 239E, Toms River, N.J. (1948)
BUECHEL, Frederick A., 4106 Tennyson, Houston, Tex. (1921)
BUECHEL, Henry T., Univ. of Washington, Dept. of Econ., Seattle, Wash. (1942)
BUEHLER, Alfred G., Univ. of Pennsylvania, Wharton Sch., Philadelphia 4, Pa. (1925)
*BUES, Karl J., 171 Liberty St., San Francisco 10, Calif. (1952)
BUFF, Joseph A., Siena Col., Loudonville, N.Y. (1947)
BUKOVSKY, Alexis P., 1218 Missouri Ave., N.W., Apt. 3, Washington 11, D.C. (1942)
BULL, Elwyn M., 3922 Richmond-Henrico Turnpike, Apt. 5, Richmond 22, Va. (1951)
BULLOCK, Paul, Jr., 1623A Fremont Ave., South Pasadena, Calif. (1942)
BULLOCK, Roy J., 8 N. Oakland St., Arlington, Va. (1930)
BULLOCK, Theodore T., 2420 R, Lincoln, Neb. (1913)
BUMA, Harold L., 1147 Judson Dr., Mountain View, Calif. (1949)
BUNCE, Edgar F., Jr., 1515 Brandywine Blvd., Wilmington 3, Del. (1949)
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BUNKE, Harvey C., Univ. of Tennessee, Col. of Com., Knoxville, Tenn. (1950)
BUNKERS, Elmer W., Univ. of Minnesota, Div. of Agric. Econ., St. Paul 1, Minn. (1952)
BUNTING, Robert L., Univ. of North Carolina, Dept. of Econ., Chapel Hill, N.C. (1949)
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BURCH, Daniel W., 5119 N. 25th Rd., Arlington, Va. (1947)
BURDICK, E. Douglass, Univ. of Pennsylvania, Wharton Sch., Philadelphia 4, Pa. (1933)
BURDICK, Raymond T., 311 Plum St., Fort Collins, Colo. (1923)
BURGER, Alvin A., Texas Res. League, P.O.B. 2036 Capital Sta., Austin, Tex. (1942)
BURGESS, Eugene W., MSA American Embassy, Paris, France. (1928)
BURGESS, Frederick M., 211 First Ave., Broomall, Pa. (1949)

BURGESS, Kenneth F., c/o Sidley, Austin and Burgess and Harper, 11 S. LaSalle St., Chicago, Ill. (1922)
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BURGIN, Stanley F., 104 Hadfield St., Sheffield 6, England. (1951)
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BURHANS, Van Dyke, Jr., 84 Prescott St., Cambridge 38, Mass. (1950)
BURHOP, John W., 13737 Thornton Ave., Detroit 27, Mich. (1950)
¶BURK, Marguerite C., 2039 New Hampshire Ave., N.W., Washington 9, D.C. (1944)
BURK, Monroe, 2404 Elm St., Falls Church, Va. (1942)
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BURKE, C. K., US HICOG, Box 590, APO 80, c/o Postmaster, New York, N.Y. (1949)
BURKE, Joseph W., P.O. Box 218, Colorado Springs, Colo. (1939)
BURKHARD, John W., 277 Fairfield Ave., Johnstown, Pa. (1951)
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BURNS, Arthur F., 370 Central Park W., New York, N.Y. (1930)
BURNS, Arthur R., 276 Riverside Dr., New York 25, N.Y. (1938)
BURNS, Edward J., Merrimack Col., Andover, Mass. (1950)
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BURNS, John E., 4053 Wolf Rd., Western Springs, Ill. (1950)
BURNS, Mary R. (Mrs. Wendell T.), Excelsior, Minn. (1944)
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BUROS, Allan, 14 Cabot St., Winchester, Mass. (1947)
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BURRINGTON, Leo I., 81 Summer St., St. Johnsbury, Vt. (1950)
BURRIS, Edward C., Oklahoma A. and M. Col., Sch. of Com., Stillwater, Okla. (1936)
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BURRUS, Donald R., 4729 Trail Lake Dr., Ft. Worth, Texas. (1950)
BURSICK, Ralph, Univ. of Cincinnati, Cincinnati, Ohio. (1947)
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BURSTEIN, Herman, 280 Twin Lane E., Wantagh, L.I., N.Y. (1944)
BURTCHETT, Floyd F., Univ. of Houston, Box 513, 3801 Cullen Blvd., Houston, Tex. (1951)
BURTLE, James L., Int. Labor Office, Geneva, Switzerland. (1947)
BURTT, Everett J., Jr., 42 Pond Plain, Westwood, Mass. (1947)
BUSHEY, J. Hobart, Hunter Col., 695 Park Ave., New York N.Y. (1940)
BUSSING, Irvin, c/o Lowell, Smith & Evers, 50 E. 42nd St., New York 17, N.Y. (1935)
BUTLER, Arthur, Univ. of Buffalo, Dept. of Econ., Buffalo 14, N.Y. (1948)
BUTLER, Hartman L., Jr., Duff, Anderson & Clark, 208 S. La Salle St., Chicago 4, Ill. (1949)
BUTLER, Marvin H., Texas A. and M. Col., College Station, Tex. (1949)
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BUTTERS, J. Keith, Harvard Univ., Grad. Sch. of Bus. Admin., Soldiers Field, Boston, Mass. (1938)
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BUZZO, Joseph, Box 8, Standard, Calif. (1952)
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CAHN, Bertram J., 3040 W. Lake St., Chicago 12, Ill. (1935)
CAHN, Frances T., 111 E. 56th St., New York 22, N.Y. (1929)
CAHN, Frank B., Logwood Lodge, Pikesville 8, Md. (1943)
CAIN, Leonard F., 5204 42nd Ave., Hyattsville, Md. (1948)
CAIN, Roger F., Box 162, Guelph, Ont., Canada. (1953
CAINE, Walter E., Texas Eastern Transmission Corp. Box 1612, Shreveport 94, La. (1941)
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CALLE RESTREPO, Diego, Fenalco, Medellin, Colombia. (1950)
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CALVERT, Geoffrey N., Alexander & Alexander, Inc. 80 Maiden Lane, New York 7, N.Y. (1949)
CALVERT, Henry W., 109 Seventh St., N.E., Apt. C McCord Apt., Atlanta 3, Ga. (1949)
CAMBERN, John R., 1730 New Hampshire Ave., N.W. Washington 9, D.C. (1951)
CAMDEN, John E., 719 W. Wildwood, Fort Wayne Ind. (1949)
CAMERON, James C., 200 Mount Vernon, Apt. 6 Montreal West, Que., Canada. (1949)
CAMERON, Kenneth, Jr., 2010 Blackwood Dr., Walnut Creek, Calif. (1952)
CAMERON, Rondo E., Univ. of Wisconsin, Dept.

AMERON, Roy E., San Diego State Col., San Diego 15, Calif. (1930)
CAMERON, William A., 1749 E. 31st St., Lorain, Ohio. (1952)
AMMACK, T. Emerson, Univ. of Illinois, 419 David Kinley Hall, Urbana, Ill. (1942)
AMP, Chester B., 238 W. 44th, Indianapolis, Ind. (1930)
AMPBELL, A. Stuart, 2216 Monument Ave., Richmond, Va. (1943)
AMPBELL, Claude A., 638 Stiles Ave., Tallahassee, Fla. (1936)
AMPBELL, Colin D., 1413 N. Taft St., Apt. 5, Arlington, Va. (1949)
AMPBELL, F. Newell, 4113 W St., N.W., Washington, D.C. (1938)
AMPBELL, George C., Metropolitan Life Ins. Co., 1 Madison Ave., New York 10, N.Y. (1945)
AMPBELL, Harrison S., 7532 Atwood St., S.E., Washington, D.C. (1952)
AMPBELL, Kenneth H., 3406 Garfield St., N.W., Washington 7, D.C. (1944)
AMPBELL, Rita R. (Mrs. W. Glenn), 525 Argyle Dr., Falls Church, Va. (1945)
AMPBELL, Robert, Univ. of Oregon, Dept. of Econ., Eugene, Ore. (1952)
***CAMPBELL, Rosemary G. (Mrs. Colin D.)**, 1413 N. Taft St., Apt. 5, Arlington, Va. (1950)
AMPBELL, Thomas C., Jr., West Virginia Univ., Col. of Com., Morgantown, W.Va. (1949)
***CAMPBELL, W. Glenn**, 525 Argyle Dr., Falls Church, Va. (1949)
AMPOS-SALAS, Octavio, Zapotecas 24, Colonia Obrera, Mexico, D.F. (1947)
ANNON, Arthur M., Univ. of Washington, Col. of Bus. Admin., Seattle 5, Wash. (1947)
ANON, Helen, 204 Cayuga Heights Rd., Ithaca, N.Y. (1940)
ANOYER, Helen G., Univ. of Minnesota, Sch. of Bus. Admin., Minneapolis 14, Minn. (1941)
ANTARERO, Luis A., Superintendencia de Bancos, Managua, Nicaragua. (1948)
ANTRELL, Lang L., Los Angeles City Col., 855 N. Vermont Ave., Los Angeles 29, Calif. (1949)
APLAN, Benjamin, 2534 N. Vermont St., Arlington, Va. (1935)
CAPP, Seth B., c/o Middle City Sta., P.O. Box 2041, Philadelphia 3, Pa. (1912)
APRON, William M., 10556 Wilkins Ave., Los Angeles 24, Calif. (1949)
ARALOPOULOS, N. E., 4505 Cote des Neiges, Apt. 2, Montreal, Que., Canada. (1951)
ARATZAS, George, 1275 Grant Ave., New York 56, N.Y. (1950)
ARBERT, Leslie E., Univ. of California, Dept. of Econ., Berkeley 4, Calif. (1946)
ARDENAS, Jose C., Casilla 2352, Quito, Ecuador. (1950)
ARDENAS PEREZ, Pablo, Calle 13 No. 9-20, Oficina 410, Bogotá, Colombia. (1951)
ARDWELL, Rosson L., 1223 E. 57th St., Chicago 37, Ill. (1951)
CAREY, James A., 4906 Deal Dr., Glassmanor, Washington 20, D.C. (1950)
AREY, Robert D., 3025 Sutherland Ave., Indianapolis, Ind. (1942)
AREY, Robert L., Columbia Univ., 711 Hamilton Hall, New York, N.Y. (1931)
ARLIN, Edward A., 3100 E. Mt. Hope Ave., Box 561, R.D. 2, Lansing, Mich. (1948)
ARLIP, Alfred B., Penn Gardens, Apt. B4, 46th and High Sts., Pennsauken 8, N.J. (1948)
***CARLIP, Vivian (Mrs. Alfred B.)**, Penn Gardens, Apt. B4, 46th and High Sts., Pennsauken 8, N.J. (1950)
ARLL, Richard R., 2543 Hilgard, Berkeley 9, Calif. (1950)
ARLOCK, John E., Jr., 8006 Rodney St., Philadelphia 19, Pa. (1940)
ARLSON, Knute E., 5429 Elliot Ave. S., Minneapolis 17, Minn. (1932)
ARLSON, Reynold E., Vanderbilt Univ., Dept. of Econ., Nashville 4, Tenn. (1940)
ARLSON, Theodore L., Western Michigan Col., Kalamazoo, Mich. (1951)
ARLSON, Valdemar, Yellow Springs, Ohio. (1936)
ARLTON, Frank T., Case Inst. of Tech., Cleveland 6,

CARMICHAEL, Fitzhugh L., Univ. of Denver, Bur. of Bus. and Soc. Res., 211 15th St., Denver, Colo. (1940)
CARNES, Hugh B., Tulane Univ., Col. of Com., New Orleans 15, La. (1948)
CARNEY, David E., Ghana Nat. Col., P.O. Box 161, Cape Coast, Gold Coast, Africa. (1953)
CARNEY, James J., Jr., Box 397, Univ. Br., Coral Gables, Fla. (1941)
CAROTHERS, Neil, 807 W. Market St., Bethlehem, Pa. (1927)
CARPENTER, Cecil C., Univ. of Kentucky, Lexington 29, Ky. (1929)
***CARPENTER, Helen M.**, 18 Chauncy St., Cambridge 38, Mass. (1952)
CARPENTER, John C., 17631 Hermine Ave., Tinley Park, Ill. (1952)
CARPENTER, Mary Jane, 119 Park St., Montclair, N.J. (1950)
CARPENTER, William M., 35 E. 84th St., New York 28, N.Y. (1926)
CARR, Charles R., 1801 Clydesdale Pl., N.W., Washington, D.C. (1949)
CARR, D. W., Macdonald Col. P.O., Quebec, Que., Canada. (1949)
CARR, Harold N., McKinsey & Co., 1625 I St., N.W., Washington, D.C. (1944)
CARR, Hobart C., Fed. Res. Bank, Domestic Res. Div., New York 45, N.Y. (1939)
CARRATT, Chris A., P.O. Box 713, Starke, Fla. (1949)
CARRILLO-BATALLA, Tomas E., Altagracia A Salas 28, Caracas, Venezuela. (1949)
CARROLL, Clifford, Gonzaga Univ., Spokane 11, Wash. (1944)
CARROLL, Dudley D., Chapel Hill, N.C. (1916)
CARROLL, John J., 11 College St., Canton, N.Y. (1947)
CARROLL, J. Murray, 36 Ware St., Lewiston, Me. (1913)
CARROLL, Mollie R., McLean, Va. (1922)
***CARROLL, Philip M.**, 1615 Maryland Dr., Urbana, Ill. (1950)
CARSE, Henry H., R.F.D., Hinesburg, Vt. (1948)
****CARSEL, Sophie R. (Mrs. Wilfred)**, 28 Clarke St., Long Beach, N.Y. (1949)
CARSEL, Wilfred, 28 Clarke St., Long Beach, N.Y. (1948)
CARSKADON, Alice K. (Mrs. John H.), 400 Park Pl., Fort Lee, N.J. (1941)
****CARSKADON, John H.**, 400 Park Pl., Fort Lee, N.J. (1952)
CARSON, William J., Garden Court Apts., 47th and Pine Sts., Philadelphia 43, Pa. (1924)
CARTER, John P., 820 Coventry Rd., Berkeley 7, Calif. (1944)
CARTER, Lucian H., Univ. of Kentucky, Col. of Com., Lexington, Ky. (1951)
CARTER, William A., Elm St., Norwich, Vt. (1928)
CARTER, William H., Jr., Univ. of Connecticut, Storrs, Conn. (1930)
CARTTER, Allan M., Duke Univ., Dept. of Econ. and Bus. Admin., Durham, N.C. (1948)
CARTWRIGHT, Philip W., Univ. of Washington, Inst. of Labor Econ., Seattle 5, Wash. (1948)
†CARVER, Thomas N., 226 Palisades Ave., Santa Monica, Calif. (1893)
CARWELL, Joseph, 1660 Lanier Pl., N.W., Washington, D.C. (1949)
CASADAY, L. W., Univ. of Arizona, Bur. of Bus. Res., Tucson, Ariz. (1950)
CASCINO, Anthony, Bendix Home Appliances, Inc., 3300 W. Sample St., South Bend 24, Ind. (1946)
CASE, Fred E., Univ. of California, Sch. of Bus. Admin., Los Angeles 24, Calif. (1947)
CASE, Harold C. M., Univ. of Illinois, Dept. of Agric. Econ., Urbana, Ill. (1919)
CASE, Winthrop W., Fed. Res. Bank, For. Res. Div., 33 Liberty St., New York 45, N.Y. (1947)
CASELLA, Stephen, 90-08 32nd Ave., Jackson Heights, L.I., N.Y. (1952)
CASKEY, Wayne F., 1172 N. Marquette St., La Salle, Ill. (1933)
CASSADY, Ralph, Jr., Univ. of California, Col. of Bus. Admin., Royce Hall 250, Los Angeles, Calif. (1943)
CASSIDY, James K., St. Patrick's Church, Garryowen, Bernard P.O., Iowa. (1944)
CASSIDY, Robert F., 19 Carol St., West Albany, N.Y. (1949)
CASSIDY, William J., 1400 Fidelity Bldg., Kansas

CASSIMATIS, Christos E., 18 Solomou St., Athens, Greece. (1951)
CASSINI, (Mrs.) Mildred A., 3355 16th St., N.W., Washington 10 D.C. (1948)
CASTILLO, Eugenio, c/o Banco de Fomento Agricola e Industrial, Havana, Cuba. (1947)
CASTLES, Ira C., Univ. of Rhode Island, Col. of Bus. Admin., Kingston, R.I. (1947)
CASTRO, Amado A., Richards Hall 108, Harvard Grad. Center, Cambridge 38, Mass. (1950)
CASTRO, Simon, Contraloria General de la Republic, Santiago, Chile. (1950)
CATLIN, Warren B., Bowdoin Col., Brunswick, Me. (1909)
CAULFIELD, Henry P., Jr., 2114 Leroy Pl., N.W., Washington 8, D.C. (1944)
CAVE, Richard A., 38 Bulwer Pl., Brooklyn 7, N.Y. (1946)
CAVE, Roy C., 467 Kentucky Ave., Berkeley 7, Calif. (1928)
CAVERLY, Harcourt L., 2450 Guardian Bldg., Detroit 26, Mich. (1943)
CAVERT, William L., 1443 Grantham St., St. Paul 8, Minn. (1942)
CAVIN, James P., 5819 Wyngate Dr., Bethesda, Md. (1940)
CAWTHORNE, Delmas R., 7547 State Line, Kansas City, Mo. (1939)
CAZELL, Gabriel F., 2503 S. Walter Reed Dr., Apt. 2, Arlington, Va. (1944)
CEBUHAR, Stanley, P.O. Box 297, Area A, Wright-Patterson AFB, Ohio. (1952)
CELLA, Francis R., Univ. of Oklahoma, Col. of Bus. Admin., Bur. of Bus. Res., Norman, Okla. (1945)
CELLARIUS, P. c/o N. V. Handelsvereniging Amsterdam, Djalan Merak 1, Surabaya, Indonesia. (1947)
CERIANI, Luigi, Ufficio Studi, Sede Centrale, Banca Nazionale del Lavoro, Via Veneto, Rome 37, Italy. (1949)
CHACE, James E., Jr., 1014 N.E. Fifth St., Gainesville, Fla. (1930)
CHADBOURNE, Walter W., Hercules Powder Co., Wilmington, Del. (1939)
CHADWICK, Leonard E., San Diego State Col., San Diego 15, Calif. (1942)
CHAIKEN, Israel B., 215-40 Murdock Ave., Queens Village 29, N.Y. (1944)
CHALK, Alfred F., Texas A. and M. Col., Econ. Dept., College Station, Tex. (1949)
CHALMERS, Henry, 5335 43rd St., N.W., Washington 15, D.C. (1918)
CHALMERS, John, Box 128, Gambier, Ohio. (1947)
**CHAMBERLAIN, Mariam (Mrs. Neil W.), 1690 Ridge Rd., North Haven, Conn. (1942)
CHAMBERLAIN, Neil W., 1690 Ridge Rd., North Haven Conn. (1941)
CHAMBERLIN, Edward H., 4 Channing St., Cambridge, Mass. (1928)
CHAMBERLIN, Vell B., 316 Taylor Ave., Glen Ellyn, Ill. (1929)
CHAMBERS, Raymond, Univ. of Buffalo, Crosby Hall, Buffalo 14, N.Y. (1922)
CHAMIEH, Sohail M., Trans-Arabian Pipe Line Co., Beirut, Lebanon. (1950)
CHANCES, Ralph J., Tulane Univ., New Orleans 18, La. (1947)
CHANDLER, Lester V., 214 Western Way, Princeton, N.J. (1939)
CHANG, Alfred Z., 215 C St., S.E., Apt. 208, Washington 3, D.C. (1950)
CHANG, Ching-Gwan, 1801 Clydesdale Pl., N.W., Washington 9, D.C. (1950)
CHANG, Fine, c/o Mr. Pat Liu, The Chinese Journal, 7 E. Broadway, New York 38, N.Y. (1952)
CHANG, Jason F. H., P.O. Box 864, Presidio of Monterey, Monterey, Calif. (1952)
*CHANG, Kuo-Sui L., P. O. Box 662, Sta. A, Champaign, Ill. (1950)
CHANNING, Mark G., 8771 Dumbarton Rd., Detroit 4, Mich. (1953)
**CHAO, Yung-Yen, 891 Belle Ave., Teaneck, N.J. (1951)
CHAPEL, Robert J., 1025 Grant Bldg., Pittsburgh 19, Pa. (1953)
CHAPELLE, C. C., 308 W. Washington St., Chicago 6, Ill. (1951)
CHAPMAN, Herman H., 509 9th St., Tuscaloosa, Ala.
CHAPMAN, Janet G., 56 Ward Ave., Northampton, Mass. (1947)
CHAPMAN, John M., Columbia Univ., Sch. of Bus., New York 27, N.Y. (1920)
*CHARDAK, Burton A., 1532 W. Venango St., Philadelphia 40, Pa. (1952)
CHARLES, Raymond A., 21931 Snow Ave., Dearborn, Mich. (1950)
CHARLTON, Joseph W., 1407 Elm St., Grinnell, Iowa. (1944)
CHARTENER, William H., 53 Beechwood Dr., Youngstown 12, Ohio. (1947)
CHARUHAS, George P., U. S. Naval Ammunition Depot, St. Juliens Creek, Portsmouth, Va. (1949)
CHASE, Charles H., Westchester Apts. 123-B, Washington 16, D.C. (1916)
CHASE, Stuart, Georgetown, Conn. (1942)
CHAUFOURNIER, Roger A., 2801 Quebec St., N.W., Washington 8, D.C. (1953)
CHAVE, Grant C., 9030 S. Hoyne, Chicago 20, Ill. (1949)
CHAWNER, Lowell J., 6701 Meadow Lane, Chevy Chase 15, Md. (1933)
CHEIT, Earl F., 45 Melbourne Ave., S.E., Minneapolis 14, Minn. (1950)
CHELEY, W. F., 3819 44th N.E., Seattle 5, Wash. (1946)
CHEN, Yu-nien, 147-60 Charter Rd., Apt. D, Jamaica 35, N.Y. (1947)
CHENAULT, Lawrence R., 205 E. 78th St., New York 21, N.Y. (1938)
CHENERY, Hollis B., Stanford Univ., Dept. of Econ., Stanford, Calif. (1949)
CHENEY, Coleman B., Skidmore Col., Dept. of Econ., Saratoga Springs, N.Y. (1948)
*CHENG, Pao Lun, 933 W. Johnson St., Madison, Wis. (1952)
CHENKIN, Alvin, 40-G Georgian Ct., Bergenfield, N.J. (1945)
CHERINGTON, Charles R., Westford Rd., Concord, Mass. (1939)
CHERINGTON, Paul W., 9 Coolidge Hill Rd., Cambridge 38, Mass. (1946)
CHERNIAK, A. D., 1160 Victoria Ave., Windsor, Ont., Canada. (1951)
CHERNICK, Jack, 28 W. Wentworth Ct., Minneapolis 19, Minn. (1943)
CHERNICK, Sidney E., Univ. of Melbourne, Dept. of Econ., Carlton N. 3, Vic., Australia. (1946)
CHERNOFSKY, Morris I., P.O. Box 81, St. Johns Pl. Sta., Brooklyn 13, N.Y. (1949)
**CHERNOFSKY, Ruth G. (Mrs. Morris I.), P.O. Box 81, St. Johns Pl. Sta., Brooklyn 13, N.Y. (1950)
CHERRINGTON, Homer V., Northwestern Univ. Sch. of Com., Evanston, Ill. (1923)
CHERRY, Robert W., Greater Boston Milk Mktg Area, 230 Congress St., Boston 10, Mass. (1953)
CHESKIN, Irving W. 31 Observatory Dr., Croton-on-Hudson, N.Y. (1948)
CHESTER, Harry L., 3603 Parkview Ave., Baltimore 7, Md. (1947)
CHEYFITZ, Edward T., 4810 Morgan Dr., Chevy Chase 15, Md. (1946)
CHEYNEY, William J., 1627 K St., N.W., Washington 6, D.C. (1932)
*CHIANG, Alpha Chung-i, 67-81 Fleet St., Forest Hills Queens, N.Y. (1951)
CHIEN, Robert I., Wyandotte Chemicals Co., Mkt Res. Dept., Wyandotte, Mich. (1949)
CHILD, Frank C., Pomona Col., Dept. of Econ., Claremont, Calif. (1950)
CHILD, Robert W., 5316 Maple St., Bellaire, Tex (1953)
CHILDS, Frank E., Western Reserve Univ., Dept. of Bus. Admin., Cleveland 6, Ohio. (1936)
CHILDS, James B., Lib. of Cong., Washington, D.C (1925)
*CHILTON, Werner L., c/o Mrs. P. Sussman, 423 W 118th St., New York 27, N.Y. (1952)
CHIN, Rockwood, Berea Col., Dept. of Econ., Berea Ky. (1952)
CHINGOS, E. George, Chingos & Sons, 818-20 Ave. of the Americas, New York 1, N.Y. (1934)
CHINLUND, Edwin F., R. H. Macy and Co., 151 W 34th St., New York 1, N.Y. (1924)
CHLEPNER, B. S., 79 Ave., Albert Lancaster, Uccle Brussels, Belgium. (1942)

CHRIST, Carl, Johns Hopkins Univ., Dept. of Polit. Econ., Baltimore 18, Md. (1947)
CHRISTELOW, Allan, Box 680, Benj. Franklin Sta., Washington, D.C. (1944)
CHRISTEN, Elizabeth H., Box 98, R.D. 1, Watervliet, N.Y. (1946)
CHRISTENSEN, Kenneth C., 245 Market St., Room 214, San Francisco 6, Calif. (1946)
CHRISTENSON, Carroll L., 213 S. Bryan Ave., Bloomington, Ind. (1925)
CHRISTIAN, W. E., Mississippi Agric. Exp. Sta., Dept. of Agric. Econ., State College, Miss. (1950)
CHRISTIE, George A., Jr., 134 Prescott Ave., Prospect Park, N.J. (1950)
*CHRISTOPHER, Benjamin B., White Stone, Va. (1952)
CHRYSLER, Russell L., 4153 Vantage Ave., North Hollywood, Calif. (1937)
CHUBB, Louise, Bur. of Labor Statis., Div. of Prices and Cost of Liv., Wing 1-D, Curie Hall, Washington 25, D.C. (1949)
CHUDSON, Walter A., 11 Pryer Lane, Larchmont, N.Y. (1939)
CHUNG, A. M., 5411 Chancellor St., Philadelphia 39, Pa. (1953)
CHUNG, Nam Kyu, 33 Cambridge Rd., Madison, Wis. (1949)
CHUTE, Aaron H., Univ. of Texas, Col. of Bus. Admin., Austin 12, Tex. (1937)
CIACCIO, Jack N., 1313 Oak St., Basement Apt., Evanston, Ill. (1951)
CIESLA, Casimir, 115 W. Carpenter Lane, Philadelphia 19, Pa. (1949)
CIOSEK, Carl P., 17 Indian Pk., Chicopee, Mass. (1948)
CIST, Frank, Box 825, Delray Beach, Fla.(1941)
CIVIC, Miriam, 76 Carmine St., New York 14, N.Y. (1949)
CLAGUE, Ewan, 3821 Woodley Rd., Washington, D.C. (1932)
CLAREY, William A., 105 Wisconsin Ave., Peoria, Ill. (1952)
CLARK, Alden H., Henry Holt & Co., 383 Madison Ave., New York 17, N.Y. (1952)
CLARK, Clifford D., 2114 Key Blvd., Arlington, Va. (1950)
CLARK, Douglas H., 502 Driveway, Ottawa, Ont., Canada. (1952)
CLARK, E. Harrison, Int. Bank for Recon. and Dev., 1818 H St., N.W., Washington 25, D.C. (1940)
CLARK, E. N., 790 N. Entrance, Kankakee, Ill. (1948)
CLARK, E. Sayre, N.E. 32, Reading Tp., R. 1, Ancona, Ill. (1953)
CLARK, Eugene, Ohio Wesleyan Univ., Dept. of Econ., Delaware, Ohio. (1943)
CLARK, Evans, 330 W. 42nd St., New York, N.Y. (1932)
§CLARK, Floyd B., College Station, Tex. (1941)
CLARK, Harold F., Columbia Univ., Box 507, Teachers Col., New York, N.Y. (1930)
CLARK, Jere W., West Virginia Univ., Col. of Com., Morgantown, W.Va. (1950)
CLARK, John D., Coun. of Econ. Advisers, Exec. Office of the Pres., Washington 25, D.C. (1929)
CLARK, John J., St. John's Univ., Sch. of Com., 96 Schermerhorn St., Brooklyn, N.Y. (1951)
†CLARK, John M., 41 Wright St., Westport, Conn. (1909)
CLARK, Lincoln H., New York Univ., Grad. Sch. of Bus. Admin., 90 Trinity Pl., New York 6, N.Y. (1941)
CLARK, M. Gardner, New York State Sch. of Ind. and Labor Rela., Cornell Univ., Ithaca, N.Y. (1949)
CLARK, Paul G., ECA Mission, 62 Via Veneto, Rome, Italy. (1949)
CLARK, Ralph N., 32 Longview Dr., Longmeadow 6, Mass. (1946)
CLARK, Walter E., 524 Cheney St., Reno, Nev. (1902)
CLARKE, Edwin C., R.D. 4, Beaver Falls, Pa. (1948)
CLARKE, Stephen V. O., W. Europ. Br., Div. of Res. for W. Europe, Dept. of State, Washington 25, D.C. (1948)
CLAROS, José C., P.O. Box 286, Oruro, Bolivia. (1952)
CLAUNCH, Sidney J., Jr., 745 University, Madison 5, Wis. (1949)
CLAWSON, C. Joseph, Univ. of California, Sch. of Bus. Admin., Los Angeles 24, Calif. (1950)
†CLAY, Sir Henry, 29 Charlbury Rd., Oxford, England. (1949)
CLEAVER, George H., Bard Col., Annandale-on-Hudson, N.Y. (1951)
CLELAND, Sherrill, 401-A Butler Ave., Princeton, N.J. (1949)
CLEMEN, Rudolf A., 26 Lilac Lane, Princeton, N.J. (1924)
CLEMENCE, Richard V., 61 Beverly Rd., Wellesley 81, Mass. (1941)
CLEMENS, Eli W., Univ. of Maryland, Col. of Bus. Admin., College Park, Md. (1935)
CLEMENS, Richard, Jr., 173 Westminster Rd., West Hempstead, L.I., N.Y. (1937)
CLENDENIN, John C., Univ. of California, Los Angeles 24, Calif. (1953)
CLEVELAND, William C., Indiana Univ., Dept. of Econ., Bloomington, Ind. (1922)
CLEWETT, Robert L., Univ. of Michigan, Sch. of Bus. Admin., Ann Arbor, Mich. (1949)
CLEWORTH, Marc M., P.O. Box 165, Elgin, Ill. (1947)
CLICKNER, Edwin K., 211 Delaware Ave., S.W., Washington 4, D.C. (1952)
*CLIFFORD, A. Jerome, 321 Willing's Alley, Philadelphia 6, Pa. (1952)
CLINE, Denzel C., 134 Kensington Rd., East Lansing, Mich. (1927)
CLOOS, George W., 1536 N. La Salle St., Chicago 10, Ill. (1950)
CLOUGH, Shepard B., Columbia Univ., New York 27, N.Y. (1943)
CLOVER, Vernon T., 2515 31st St., Lubbock, Tex. (1942)
CLOWER, Robert W., 100 Washington Ave., Pullman, Wash. (1952)
CLUSE, Robert R., 128 Caroline St., Rochester 20, N.Y. (1952)
CLYMAN, Bernard, Univ. of Delaware, Econ. Dept., Newark, Del. (1942)
COAN, Robert W., 669 E. 118th St., Cleveland 8, Ohio. (1948)
COASE, Ronald H., Univ. of Buffalo, Dept. of Econ., Buffalo 14, N.Y. (1946)
*COATS, A. W., Johns Hopkins Univ., Dept. of Polit. Econ., Baltimore 18, Md. (1952)
COBB, T. C., Northwestern Ohio Ind. Coun., 305 Frumkin Bldg., Toledo 2, Ohio. (1947)
COBLENTZ, William K., American Com. on United Europe, 537 Fifth Ave., New York 17, N.Y. (1946)
COCHRAN, Clay L., NRECA, 1303 New Hampshire Ave., N.W., Washington 6, D.C. (1948)
COCHRAN, Harry A., Temple Univ., Philadelphia, Pa. (1948)
COCHRAN, John A., Univ. of Illinois, Dept. of Econ., Urbana, Ill. (1948)
*COCHRAN, Kendall P., Ohio State Univ., Dept. of Econ., Columbus 10, Ohio. (1950)
§COCHRAN, Thomas C., Univ. of Pennsylvania, Philadelphia 4, Pa. (1947)
COCHRANE, Willard W., Dept. of Agric. Econ., Univ. Farm, St. Paul 1, Minn. (1949)
CODDINGTON, Herbert, 88-12 189th St., Hollis 7, N.Y. (1948)
CODY, Peter M., 5068 6th Pl., N.E., Washington 17, D.C. (1947)
COEN, Edward, c/o J. H. Neumann, 340 Riverside Dr., New York 25, N.Y. (1952)
COGEN, Charles, 1555 Odell St., New York, N.Y. (1938)
COHAN, Avery B., c/o Dept. of State (Geneva), Washington 25, D.C. (1941)
COHANY, Harry P., 647 E. 14th St., New York 9, N.Y. (1951)
COHEN, Daniel, 5818 Ninth St., N.W., Washington 11, D.C. (1948)
COHEN, Frank, 88 Central Park W., New York, N.Y. (1951)
COHEN, Harry L., 1114 E. 38th St., Brooklyn 10, N.Y. (1922)
COHEN, Jacob, Bowling Green State Univ., Dept. of Econ., Bowling Green, Ohio. (1946)
COHEN, Jerome B., 210 W. 101st St., Apt. 14J, New York 25, N.Y. (1943)
COHEN, Joseph, 1533 Fargo Ave., Chicago, Ill. (1948)
COHEN, Lawrence B., 411 W. 114th St., New York 25, N.Y. (1948)
COHEN, Martin A., 23851 Scotia, Oak Park, Mich. (1950)
*COHEN, Morris, Univ. of Cambridge, Dept of App. Econ., 30 Lensfield Rd., Cambridge, England. (1942)

*COHEN, Noah, 1709 Brazos St., Austin, Tex. (1951)
COHEN, Paul C., 5805 Greenspring Ave., Baltimore, Md. (1948)
COHEN, Sam L., 41 Broad St., New York, N.Y. (1912)
COHEN, Sanford, 6230 Ridge Rd., Cleveland 29, Ohio. (1945)
COHEN, Sidney, 4006 Wabash Ave., Baltimore 15, Md. (1951)
COHEN, Wilbur J., 9819 Capitol View Ave., Silver Spring, Md. (1936)
COHN, Stanley H., 3445 38th St., N.W., Washington 16, D.C. (1947)
COIT, Charles G., Durant Hotel, 2600 Durant Ave., Berkeley, Calif. (1945)
COIT, Eleanor G., American Labor Educa. Serv., 1776 Broadway, New York, N.Y. (1930)
COKER, Joseph D., 16 Lee Blvd., Falls Church, Va. (1947)
COLBERG, Marshall R., Florida State Univ., Dept. of Econ., Tallahassee, Fla. (1940)
COLBURN, Lawrence D., Econometric Inst., 230 Park Ave., New York 17, N.Y. (1946)
COLE, Arthur H., 15 Hemlock Rd., Cambridge 38, Mass. (1913)
COLE, Charles W., S. Pleasant St., Amherst, Mass. (1935)
COLE, David M., 20-80 28th St., Apt. 3C, Astoria 5, L.I., N.Y. (1941)
COLE, George J., 2925 Glenridge Ave., Alhambra Calif. (1944)
COLEMAN, Floyd B. T., 435 W. 119th St., New York, N.Y. (1935)
COLEMAN, George W., Mercantile Trust Co., 721 Locust St., St. Louis 1, Mo. (1944)
COLEMAN, John R., Massachusetts Inst. of Tech., Dept. of Econ., Cambridge, Mass. (1947)
COLEMAN, Raymond W, 110 Ross Lane, Morgantown, W.Va. (1936)
COLEN, Donald J., 48 Bellingham Lane, Great Neck, L.I., N.Y. (1944)
COLGAN, Virginia E., Life Ins. Asso. of America, 488 Madison Ave., New York 22, N.Y. (1941)
COLIN, David H., 2 Rutherford Pl., New York, N.Y. (1942)
COLLACOTT, R. H., Standard Oil Co., Sales Res., 1530 Midland Bldg., Cleveland, Ohio. (1952)
COLLADO, Emilio G., Old Westbury Rd., East Hills, Roslyn, L.I., N.Y. (1932)
COLLIER, Robert P., Univ. of Washington, Dept. of Econ., Seattle 5, Wash. (1952)
COLLINS, G. P., Oklahoma A. and M. Col., Dept. of Agric. Econ., Stillwater, Okla. (1943)
COLLINS, James E., Santa Clara Univ., Col. of Bus. Admin., Santa Clara, Calif. (1948)
COLLINS, Robert T., Alabama Poly. Inst., Auburn, Ala. (1947)
COLLINS, William J., St. Ambrose Col., Davenport, Iowa. (1936)
COLM, Gerhard, Nat. Plann. Asso., 1606 New Hampshire Ave., N.W., Washington 9, D.C. (1934)
COLTON, Raymond R., 60 W. 68th St., New York 23, N.Y. (1952)
COMER, George P., Dept. of Justice, Antitrust Div., Washington, D.C. (1948)
COMINS, Harold N., 6 Park Ave., Wakefield, Mass. (1935)
COMISH, Newel H., Univ. of Oregon, Eugene, Ore. (1918)
¶COMPTON, Wilson M., Seneca Farms, Herndon, Va. (1919)
COMSTOCK, Alzada, Mount Holyoke Col., South Hadley, Mass. (1930)
COMSTOCK, Edward G., 3 Midland Gardens, Bronxville, N.Y. (1941)
CONANT, Luther, 46 Shepard St., Apt. 22, Cambridge 38, Mass. (1915)
CONANT, Michael, 801 Aiken Ave., Peoria 5, Ill. (1948)
CONARD, Joseph W., 132 Park Ave., Swarthmore, Pa. (1948)
CONDLIFFE, John B., Univ. of California, Dept. of Econ., Berkeley 4, Calif. (1941)
CONDOIDE, Mikhail, 188 W. 10th Ave., Columbus 1, Ohio. (1937)
CONDON, Louis E., 9 Perry St., Charleston, S. C. (1950)
CONKLIN, George T., Jr., Guardian Life Ins. Co., 50 Union Sq., New York, N.Y. (1949)

CONKLING, Roger L., 4430 S.W. Carl Pl., Portland 1 Ore. (1947)
CONKRIGHT, William A., c/o For. Serv. Mail Roor (Dept. of State), Washington 25, D.C. (1950)
CONLEY, Garland B., 2854 Connecticut Ave., N.W. Apt. 10, Washington 8, D.C. (1947)
CONLEY, (Mrs.) Helen, 3927 Fairfield Ave., For Wayne 6, Ind. (1947)
CONLY, (Mrs.) Gladys N., Bur. Int. du Travail, Statis Div., Geneva, Switzerland. (1949)
CONN, Harlan D., American Univ. at Cairo, 11 Sharia Kasr el-Aini, Cairo, Egypt. (1941)
CONNAIR, Norbert R., 32 W. Third St., Bayonne N.J. (1951)
CONNOR, John, Loyola Univ., New Orleans 15, La (1946)
CONNORS, Robert G., 848 Sherbourne Dr., Inkste Mich. (1947)
CONOVER, Harry, First Secy., U. S. Embassy, Paris France. (1944)
CONRAD, Alfred H., 12A Ash St., Cambridge 38, Mass (1949)
CONSLER, Robert E., St. Lawrence Univ., Cantor N.Y. (1947)
CONSTANTIN, James A., Univ. of Washington, Co of Bus. Admin., Seattle 5, Wash. (1947)
*CONTONS, Albert J., St. Peter's Church, Sout Boston 27, Mass. (1950)
CONVERSE, Paul D., Univ. of Illinois, Col. of Com and Bus. Admin., Urbana, Ill. (1915)
CONWAY, Lawrence V., Univ. of Illinois, Col. of Com and Bus. Admin., Urbana, Ill. (1948)
CONWAY, Leonard T., 417 W. 118th St., New York 2 N.Y. (1949)
CONWELL, Ralph E., Univ. of Wyoming, Dept. c Econ. and Soc., Laramie, Wyo. (1938)
COOGAN, James F., George Washington Univ., Ha of Gov. 311, Washington, D.C. (1948)
COOK, Edward J., 147-06 76th Ave., Flushing 6 N.Y. (1951)
COOK, Franklin H., 325 W. Park Ave., State Colleg Pa. (1946)
COOK, George C., 510 N. Parkway Dr., El Dorad Ark. (1948)
COOK, Lorne D., Univ. of Michigan, Dept. of Econ Ann Arbor, Mich. (1948)
¶COOK, Paul W., Jr., 2323 Brown Ave., Evanstoi Ill. (1950)
COOK, Robert G., 500 Locksley Rd., Towson 4, M (1952)
COOK, Roy C., 3370 Highwood Dr., S.E., Washingto 20, D.C. (1944)
COOKE, Blaine M., Standard Oil Co. (Ind.), Dis Econ. Dept., 910 S. Michigan Ave., Chicago 80, I (1947)
COOKE, Gilbert W., Bowling Green State Univ Bowling Green, Ohio. (1931)
COOKE, Helen J., 1859 Arbor Lane, Union, N.J. (194
COOKE, Robert G., AO 2224548, 39th Fighter Inte ceptor Sq., 51st Fighter Interceptor Wing, APO 97 c/o Postmaster, San Francisco, Calif. (1950)
COOKENBOO, Leslie, Jr., Rice Inst., 403 Lovett Ha Houston 1, Tex. (1951)
COOLIDGE, Lawrence D., 440 S. 10th St., Corvall Ore. (1948)
COOLSEN, Frank G., Univ. of Kentucky, Col. of Com Lexington 29, Ky. (1946)
COOMBS, Philip H., 27 Grimes Rd., Old Greenwic Conn. (1939)
COONS, Alvin E., Ohio State Univ., Dept. of Eco Columbus 10, Ohio. (1947)
COONS, Arthur G., 1852 Campus Rd., Los Angel Calif. (1920)
COOPER, Chester L., 621 Vale St., Chevy Chase, M (1942)
COOPER, Edward N., 4114 N. 4th St., Arlington, V (1943)
COOPER, Howard E., Johns Hopkins Univ., Baltimo Md. (1940)
*COOPER, John D., 527 W. 157th St., New York 3 N.Y. (1952)
COOPER, Kenneth L., 3946 Walnut, Kansas City Mo. (1952)
COOPER, Lyle W., United Packinghouse Workers America, 608 S. Dearborn, Room 1800, Chicago Ill. (1947)
COOPER, Mildred S. (Mrs. Leonard B.), 520 E. 90 St., New York 22, N.Y. (1951)

*COOPER, Orah (Mrs. Chester L.), 621 Vale St., Chevy Chase, Md. (1942)
COOPER, Vernom, Eastern Montana Col. of Educa., Billings, Mont. (1939)
COOPER, William W., Carnegie Inst. of Tech., Pittsburgh 13, Pa. (1947)
COPELAND, John, 2708 Cathedral Ave., N.W., Washington 8, D.C. (1946)
COPELAND, Melvin T., 324 Morgan Hall, Soldiers Field, Boston 63, Mass. (1909)
COPELAND, Morris A., Cornell Univ., Dept. of Econ., Ithaca, N.Y. (1921)
COPELAND, William L., 3329 S. Wakefield St., Arlington, Va. (1949)
COPER, Rudolf, Loyola Univ., Col. of Bus. Admin., New Orleans 15, La. (1952)
COPPOCK, Dennis J., 6 Hazelwood Rd., Woodsmoor, Stockport, Cheshire, England. (1949)
COPPOCK, Joseph D., 511 Essex Ave., Chevy Chase 15, Md. (1934)
COPPS, John A., Kalamazoo Col., Kalamazoo, Mich. (1949)
CORBETT, James F., 76 79th St., Brooklyn, N.Y. (1932)
CORCORAN, Joseph J., 17 Moss Lane, Levittown, Hicksville, L.I., N.Y. (1948)
CORDERO, Federico A., Univ. of Puerto Rico, Faculty of Soc. Sci., Rio Piedras, P.R. (1949)
CORDERO, Rafael de J., Controller of Puerto Rico, Box 1712, San Juan, P.R. (1939)
COREY, C. Stanley, 573 Vine St., Kent, Ohio. (1935)
COREY, E. Raymond, Harvard Bus. Sch., Soldiers Field, Boston 63, Mass. (1950)
CORNISH, Robert S., State Teachers Col., Nacogdoches, Tex. (1942)
CORTNEY, Philip, 410 Park Ave., New York 22, N.Y. (1944)
COSSON, Clarence, 1014 Savings and Loan Bldg., Des Moines 9, Iowa. (1927)
COTTON, Frank E., Jr., 372 Whittier Dr., Pittsburgh 35, Pa. (1950)
COTTRELL, Henry C., Phillips and Drew, Pinners Hall, Austin Friars, London, E.C. 2, England. (1952)
COULBORN, William A. L., Oglethorpe University, Ga. (1949)
COULTER, (Mrs.) Elizabeth J., 116 E. Torrence St., Columbus, Ohio. (1949)
COUPER, Walter J., Harriman Rd., Irvington, N.Y. (1923)
COURT, Andrew T., 1517 Iroquois, Detroit, Mich. (1940)
COURTNEY, Fred L., Allegheny Col., Meadville, Pa. (1951)
COURTNEY, Kent H., 5224 Prytania St., New Orleans 15, La. (1949)
COUTSOUMARIS, George P., 5520 S. Drexel Ave., Chicago 37, Ill. (1950)
COVER, John H., Univ. of Maryland, Bur. of Bus. and Econ. Res., College Park, Md. (1921)
COVER, Virgil D., Syracuse Univ., Col. of Bus. Admin., Slocum Hall, Syracuse 10, N.Y. (1932)
COWAN, Donald R. G., Univ. of Michigan, Sch. of Bus. Admin., Ann Arbor, Mich. (1925)
*COWAN, Ralph K., 1448 University Ter., Ann Arbor, Mich. (1952)
COWDEN, Dudley J., Country Club Rd., Chapel Hill, N.C. (1928)
COWDEN, T. K., Michigan State Col., Dept. of Agric. Econ., East Lansing, Mich. (1949)
COWLES, Alfred, 1130 Lake Shore Dr., Chicago, Ill. (1940)
COX, Alonzo B., Univ. Sta., Austin, Tex. (1923)
COX, Garfield V., Univ. of Chicago, Faculty Exch., Chicago 37, Ill. (1923)
COX, Reavis, 503 Walnut Lane, Swarthmore, Pa. (1934)
COYNE, William J., 2244 Washington Ave., Apt. 102, Silver Spring, Md. (1940)
COZZENS, Albert B., 1208 Hanna Bldg., Cleveland 15, Ohio. (1949)
CRAF, John R., Univ. of Louisville, Dept. of Econ.-Com., Louisville 8, Ky. (1947)
*CRAFT, Clifford J., III, 812 N. Negley Ave., Pittsburgh 6, Pa. (1953)
CRAFTON, L. Joseph, 3127 Springbrook Ave., Ann Arbor, Mich. (1949)
CRAFTS, Prescott C., Jr., 56 Concord Ave., Cambridge 38, Mass. (1944)
CRAIG, John T., US MEC, APO 777, c/o Postmaster New York, N.Y. (1951)
*CRAIG, Paul G., 76 W. Park St., Westerville, Ohio. (1950)
CRAMER, Edison H., R.F.D. 1, Sterling, Va. (1940)
CRANDALL, Burton B., Syracuse Univ., Col. of Bus. Admin., Syracuse 10, N.Y. (1949)
CRANE, John M., c/o Montgomery City Planning Comm., Dayton, Ohio. (1948)
CRANE, William A., 984 Oakland, Birmingham, Mich. (1950)
CRANMER, H. Jerome, Drew Univ., Col. of Lib. Arts, Madison, N.J. (1950)
CRAVEN, J. Howard, IIAA at La Paz, Bolivia, c/o Mailroom, Dept. of State, Washington 25, D. C. (1949)
*CRAWFORD, James F., 1218 Spring St., Madison, Wis. (1951)
CRAWFORD, John M., 6600 S.W. Barnes Rd., Portland, Ore. (1941)
CRAWFORD, Mary M., Indiana Univ., Bloomington, Ind. (1937)
CRAWFORD, Robert P., 1447½ D St., Lincoln, Neb. (1934)
CRAWFORD, Robert W., 67 Mulberry St., Springfield 2, Mass. (1951)
CRAWFORD, Wilfred H., 633 Regester Ave., Baltimore 12, Md. (1946)
CREAMER, James T., Boston Col., Chestnut Hill 67, Mass. (1947)
CREASON, Woodrow W., Concord Col., Athens, W.Va. (1949)
CREWSON, Harry B., Jr., Ohio Univ., Dept. of Econ., Athens, Ohio. (1949)
*CRIM, Ed. F., Jr., Univ. of Illinois, 215A David Kinley Hall, Urbana, Ill. (1952)
CRISAFULLI, Virgil C., Utica Col. of Syracuse Univ., Utica, N.Y. (1946)
*CRITES, Dennis M., Univ. of Oklahoma, Dept. of Mktg., Norman, Okla. (1952)
CROCKETT, Earl C., Univ. of Colorado, Boulder, Colo. (1939)
CROCKETT, Robert O., Jr., 1725 19th St, N.W., Apt. C, Washington 9, D.C. (1950)
CROLL, Philip D., Sun Oil Co., 1608 Walnut St., Philadelphia, Pa. (1946)
CROMPTON, George, 695 Main St., Worcester, Mass. (1935)
CRONIN, John A., Spring Hill Col., Spring Hill, Ala. (1938)
CRONIN, John F., 1312 Massachusetts Ave., N.W., Washington 5, D.C. (1939)
CROOK, Stanley, 203 Yale Ave., Berkeley 8, Calif. (1952)
CROOK, Wilfrid H., P.O. Box 337, Hamilton, N.Y. (1925)
CROPSEY, Joseph, 360 E. 55th St., New York 22, N.Y. (1949)
CROSBY, G. Reginald, 125 Dumbarton Rd., Baltimore 12, Md. (1925)
CROSBY, Lewis G., Brooklyn Col., Dept. of Econ., Brooklyn, N.Y. (1949)
CROSS, Betty Lou, 2122 Franklin St., Cedar Falls, Iowa. (1952)
CROSS, Ira B., 1454 Le Roy Ave., Berkeley 8, Calif. (1910)
CROSS, Michael F., c/o American Embassy, APO 500, c/o Postmaster, San Francisco, Calif. (1952)
CROSS, Sam Y., Jr., c/o Mrs. Mary C. Hall, Treas. Dept., Room 5326, 15th and Pennsylvania Ave., N.W., Washington, D.C. (1951)
CROSSON, Pierre R., 3325 Croffut Pl., S.E., Washington, D.C. (1950)
CROTEAU, John T., Catholic Univ. of America, Dept. of Econ., Washington 17, D.C. (1946)
CROTTY, William R., 654 B Bruce St., Ridgefield, N.J. (1949)
*CROUSE, Homer L., 306 E. Green St., Champaign, Ill. (1952)
CROWDER, Edward T., Jr., Bur. of the Budget, Div. of Statis. Stand., State Dept. Bldg., 17th and Pennsylvania Ave., Washington, D.C. (1934)
CROWDER, Walter F., Ind. Dist., 330 W. 42nd St., New York 36, N.Y. (1937)
*CROWE, Arthur S., 58 Madison Ave., Greenwood, Mass. (1951)
CROWELL, Thomas I., Jr., Ford, Bacon & Davis, Inc., 39 Broadway, New York 6, N.Y. (1950)

CROXTON, Fred C., 3200 16th St., N.W., Washington 10, D.C. (1911)
CROXTON, Frederick E., Columbia Univ., Hamilton Hall, New York 27, N.Y. (1941)
CRUM, William L., Univ. of California, Sch. of Bus. Admin., Berkeley 4, Calif. (1921)
CRUZ, Félix, Ave. Primera entre 78 y 80, Playa Miramar-Marianao, Cuba. (1950)
CULBERTSON, John M., 2874 S. Buchanan St., Arlington, Va. (1948)
CULBERTSON, William S., 1025 Connecticut Ave., Washington 6, D.C. (1936)
CULLEN, Elizabeth O., Asso. of American Railroads, Bur. of Ry. Econ., Transp. Bldg., Washington 6, D.C. (1949)
CULLEN, James A., 48 S. Second Ave., Mt. Vernon, N.Y. (1934)
CULLUM, James B., Jr., c/o Eastman, Dillon & Co., 15 Broad St., New York 5, N.Y. (1951)
CUMBERLAND, John H., 4205 53rd Ave., Apt. 3, Bladensburg, Md. (1951)
CUMBERLAND, William W., 25 Broad St., New York 4, N.Y. (1916)
CUMMINGS, Herbert J., 1 Scott Circle, Washington 5, D.C. (1938)
CUNANAN, Joaquin, c/o White, Page & Co., P.O. Box 2288, Manila, Philippines. (1945)
CUNKLE, Arthur L., 738 E. Jefferson, Tallahassee, Fla. (1946)
CUNNINGHAM, Henry M., 5223 Connecticut Ave., Washington, D.C. (1946)
*CUNNINGHAM, Walt, Antioch Col., Yellow Springs, Ohio. (1952)
CURRAN, Kenneth J., 728 Kiowa St., Colorado Springs, Colo. (1941)
CURTIS, Clifford A., Queen's Univ., Dept. of Polit. and Econ. Sci., Kingston, Ont., Canada. (1924)
CURTIS, Donald W., 8921 Whitney St., Silver Spring, Md. (1946)
CURTIS, L. Simington, 4459 Enright Ave., St. Louis, Mo. (1938)
CURTIS, Roy E., 2804 33rd St., S.E., Washington 20, D.C. (1920)
CURTIS, William R., 314 Greenway Blvd. E., Falls Church, Va. (1935)
CURTISS, W. M., Found. for Econ. Educa., Irvington-on-Hudson, N.Y. (1947)
CUSACK, Lawrence A., 2519 N. 65th Ave., Omaha, Neb. (1934)
CUSACK, Sister Mary Thomasine, Rosary Col., River Forest, Ill. (1942)
CUSHING, Morgan B., Bowdoin Col., Brunswick, Me. (1951)
CUSHMAN, Bernard, 9521 Saybrook Ave., Silver Spring, Md. (1948)
CUSHMAN, Frank M., Northeastern Univ., Evening Col. of Bus. Admin., Boston 15, Mass. (1949)
CUSICK, James, 7 Weatherby Rd., Hanover, N.H. (1932)
CUSSEN, Aloysius E., King's Col., Dept. of Econ., Wilkes-Barre, Pa. (1952)
CUSTARD, Harry L., 618 26th St., S., Arlington, Va. (1926)
CUSTIS, Vanderveer, 1704 Hinman Ave., Evanston, Ill. (1904)
CUTLER, Addison T., 3289 Berkshire Rd., Cleveland Heights 18, Ohio. (1938)
CUTLER, Howard A., Pennsylvania State Col., Dept. of Econ., State College, Pa. (1944)
CUTTS, Jesse M., 3737 S St., S.E., Washington 20, D.C. (1941)
CYERT, Richard M., 4801 Frew St., Pittsburgh, Pa. (1947)
CYPIN, Jack G., 61 Anvil Lane, Levittown, N.Y. (1948)

DACEY, William J., 41 Bexley Rd., Framingham, Mass. (1951)
DADE, Emil B., Univ. of Kansas, 12 Strong Hall, Lawrence, Kans. (1923)
DADISMAN, Andrew J., 305 Beverly Ave., Morgantown, W.Va. (1917)
*DADURA, Andrew, 7 South Dr., Baldwin, N.Y. (1952)
DAGGETT, Stuart, Univ. of California, Dept. of Econ., 119 South Hall, Berkeley, Calif. (1906)
DAHL, Randle E., Fenn Col., Sch. of Bus. Admin., Cleveland, Ohio. (1942)
DAHLBERG, Arthur O., U. S. Econ. Corp., 350 Fifth Ave., New York 1, N.Y. (1940)
DAICOFF, Darwin W., 1603 Alexander Ct., Waukegan Ill. (1951)
DAILEY, Don M., 6015 Kimbark Ave., Chicago 37, Ill (1921)
DAILY, Charles F., Univ. of Oklahoma, Faculty Exch. Norman, Okla. (1945)
DAKE, Leland E., Cresap, McCormick & Paget, 34 Madison Ave., New York 17, N.Y. (1948)
¶DALAL, Rustomjee Dadiba, c/o Swiss Bank Corp. 11c, Regent St., Waterloo Pl., London, S.W. England. (1931)
DALE, Ernest, Columbia Univ., Sch. of Bus., New York 27, N.Y. (1944)
DALE, Leon A., 3, Sq. Mignot, Paris 16, France. (1949
DALE, William B., 2418 Holmes Run Dr., Falls Church Va. (1950)
DALISAY, Amando M., Philippine Nat. Bank, Manila Philippines. (1938)
DALLAS, Sherman F., Georgia Inst. of Tech., Sch. o Ind. Mgt., Atlanta, Ga. (1949)
*DALTON, George, Univ. of Oregon, Dept. of Econ. Eugene, Ore. (1953)
DALY, Donald J., 758 Eastbourne Ave., Ottawa 2, Ont Canada. (1949)
DALY, Lyndon L., Univ. of Houston, Bldg. 7, Apt. 11 Houston 4, Tex. (1952)
DALY, Rex F., 7104 Rhode Island Ave., College Park Md. (1948)
DAMASKENIDES, Anthony N., 40, Tsimiski St. Salonica, Greece. (1951)
DAMERON, Wilbur R., 1711 Massachusetts Ave. N.W., Apt. 325, Washington, D.C. (1927)
*DAMRAU, William F., 182-25 Wexford Ter., Jamaic 32, N.Y. (1952)
DANBURG, Saul, 23 Keller Path, Newton Centre 59 Mass. (1952)
DANCE, Maurice E., Los Angeles State Col., Dept. o Econ. and Bus., 855 N. Vermont Ave., Los Angele 29, Calif. (1948)
DANHOF, Clarence H., 5521 Connecticut Ave., N.W Washington 15, D.C. (1936)
DANIEL, Coldwell, III, 3725 Fairfields Ave., Bato Rouge, La. (1950)
DANIEL, (Mrs.) Eleanor B., 34 North Dr., New Bruns wick 9, N.J. (1937)
DANIELS, Wilbur, 2105 Ryer Ave., New York 57, N.Y (1948)
DANKERT, Clyde E., Dartmouth Col., Dept. of Econ. Hanover, N.H. (1929)
DANNEMANN, Geraldo, c/o Correa Ribeiro & Co., 6 Wall St., Room 412, New York 5, N.Y. (1946)
DANNENBERG, Frederick M., 88 Crooke Ave Brooklyn 26, N.Y. (1936)
DANNER, Peter L., 1623 Florence Lane, Davenport Iowa. (1952)
§DANSKIN, Donald R., 123 N. Redmond, Bethany Okla. (1951)
d'ARLIN, Maurice Y., Univ. of Pennsylvania, Wharto Sch., Mktg. Dept., Philadelphia 4, Pa. (1948)
DARLING, H. Daniel, 1124 Powhatan St., Alexandria Va. (1952)
DASSEL, Virgil H., 681 Sheridan Ave., Columbu Ohio. (1930)
DAUER, Ernst A., Household Fin. Corp., 919 N. Mich gan Ave., Chicago 11, Ill. (1937)
DAUGHERTY, Carroll R., Northwestern Univ., Sch. c Com., Evanston, Ill. (1930)
**DAUGHERTY, Marion R. (Mrs. Carroll R.), Nort western Univ., Sch. of Com., Evanston, Ill. (1951)
DAUTEN, Carl A., 720 Cranbrook Dr., Kirkwood 2 Mo. (1945)
Da VAULT, James W., Univ. of Florida, Col. of Bu Admin., Gainesville, Fla. (1935)
DAVENPORT, Donald H., 81 Manning Blvd., Albany 3, N.Y. (1924)
DAVEY, Harold W., Iowa State Col., Dept. of Inc Econ., 202 Ind. Arts Bldg., Ames, Iowa. (1946)
DAVID, Charles W., Univ. of Pennsylvania Lib Philadelphia 4, Pa. (1946)
DAVID, Paul T., 2908 R St., N.W., Washington D.C. (1930)
DAVID, Robert S., 3601 Wisconsin Ave., N.W Washington 16, D.C. (1946)
DAVIDSON, Emmett, Univ. of Minnesota, Duluth Br Duluth, Minn. (1952)
DAVIDSON, Julius, 6144 Utah Ave., N.W., Washing ton 15, D.C. (1931)

DAVIDSON, Murray M., Cleveland Elec. Illuminating, 75 Public Sq., Cleveland 1, Ohio. (1951)
*DAVIDSON, Ralph K., 2509 Garrison Blvd., Baltimore 16, Md. (1952)
DAVIDSON, Sidney, Johns Hopkins Univ., Sch. of Bus. Admin., Baltimore 18, Md. (1946)
*DAVIES, David G., 10751 Strathmore Dr., Los Angeles 24, Calif. (1951)
DAVIES, George R., Univ. of Iowa, Col. of Com., Iowa City, Iowa. (1925)
DAVIES., John, Ch. of Com., 228 Ohio Bldg., Akron 8, Ohio. (1947)
DAVIES, Margaret G. (Mrs. Godfrey), 395 S. Bonnie Ave., Pasadena 4, Calif. (1936)
*DAVIES, Margaret M., 3770 Grayson St., Seattle 6, Wash. (1951)
DAVIS, Dudley D., 301 Dearborn Ave., Silver Spring, Md. (1946)
†DAVIS, Edward H., 61 Oakland Ave., Waterbury 10, Conn. (1902)
DAVIS, George F., 8 Rhea Ter., Fairmont, W.Va. (1949)
DAVIS, Gilbert C., Jr., 4719 W. 69th Ter., Prairie Village 15, Kans. (1948)
DAVIS, Hiram S., 340 Harrison Rd., Wayne, Pa. (1945)
DAVIS, Horace B., Univ. of Kansas City, Kansas City 4, Mo. (1929)
DAVIS, John A., Memphis State Col., Box 487, Memphis 11, Tenn. (1946)
DAVIS, John C., 819 Copley Lane, Silver Spring, Md. (1947)
†DAVIS, Joseph S., 691 Mirada Ave., Stanford, Calif. (1911)
DAVIS, Keith, Indiana Univ., Dept. of Mgt., Bloomington, Ind. (1951)
*DAVIS, Lance E., Univ. of Washington, Dept. of Econ., Seattle 5, Wash. (1953)
DAVIS, Leonard, Paris Embassy, Dept. of State, Washington 25, D.C. (1950)
DAVIS, Pearce, Illinois Inst. of Tech., Tech. Center, Dept. of Bus. and Econ., Chicago 16, Ill. (1950)
DAVIS, Pierpont V., 63 Wall St., New York 5, N.Y. (1912)
DAVIS, Richard M., Lehigh Univ., Dept. of Econ. and Soc., Bethlehem, Pa. (1941)
DAVIS, Thomas J., 1026 15th St., N.W., Apt. 708, Washington 5, D.C. (1949)
DAVIS, William C., 35 Parkview Ave., Bronxville, N.Y. (1939)
DAVIS, William Z., 911 Robbins Ave., Niles, Ohio. (1934)
DAVISON, Sol, 5479 Thirtieth St., N.W., Washington 15, D.C. (1936)
DAVISSON, Charles N., Univ. of Michigan, Sch. of Bus. Admin., Ann Arbor, Mich. (1944)
DAWSON, C. C., 212 Locust Ave., Frankfort, Ky. (1952)
DAWSON, John P., III, 1306 Wells St., Ann Arbor, Mich. (1951)
DAWSON, (Mrs.) Laura M., 3021 Parkway Terrace Dr., S.E., Washington 20, D.C. (1949)
*DAWSON, Wilson C., 1017 8th St., Apt. B-1, Alexandria, Va. (1953)
DAY, David W., 1916 Kentucky Ave., Fort Wayne, Ind. (1951)
DAYTON, Douglas E., Muchmore Lane, East Hampton, N.Y. (1952)
de ABREU, Luiz Simoes, Companhie Colonial do Buzi, Nova Lusitania, Via Beira, Portuguese E. Africa. (1947)
*DEADY, Daniel J., 1275 W. 103rd St., Cleveland 2, Ohio. (1951)
DEAN, Arthur H., 48 Wall St., New York 5, N.Y. (1952)
DEAN, Charles R., 23 W. 102nd St., Orangeburg, N.Y. (1947)
DEAN, Joel P., 49 Windsor Ter., Yonkers, N.Y. (1935)
DEAN, Prentice N., 1830 N. Powhatan St., Arlington, Va. (1924)
DEAN, Sidney W., Jr., 94 MacDougal St., New York 12, N.Y. (1952)
DEARING, Charles L., 722 Jackson Pl., Washington, D.C. (1935)
*DEAVER, John V., 1215 E. 58th St., Chicago 37, Ill. (1952)
De BARD, August A., Jr., 36 Robie St., Halifax, N.S., Canada. (1932)
De BAUN, Robert, 132 N. Butler St., Madison, Wis. (1951)
de BEERS, John S., 5135 Newport Ave., Washington 16, D.C. (1942)
De BIASE, Joseph A., 3100 Connecticut Ave., N.W., Washington 8, D.C. (1953)
*De BOER, Lloyd M., Univ. of Illinois, 404 David Kinley Hall, Urbana, Ill. (1952)
de CAPRILES, Miguel A., New York Univ., Washington Sq. E., New York 3, N.Y. (1943)
de CHAZEAU, Melvin G., The Knoll, Ithaca, N.Y. (1934)
De CICCO, Ernest M., 7372 N. Sheridan Rd., Chicago, Ill. (1951)
DECKINGER, E. Lawrence, c/o The Biow Co., 640 Fifth Ave., New York 19, N.Y. (1946)
De COU, Donald F., Kansas State Col., Dept. of Econ. and Soc., Manhattan, Kans. (1945)
**De FABINYI, Thomas G., University Club, 40 Trinity Pl., Boston 15, Mass. (1953)
De FABINYI, Tihamer I., University Club, 40 Trinity Pl., Boston 15, Mass. (1950)
de FORD, Herman J., 111 W. Jackson Blvd., Chicago 4, Ill. (1933)
DEGEN, Robert A., Univ. of the South, Dept. of Econ., Sewanee, Tenn. (1947)
DEHEM, Roger, Montreal Univ., Faculty of Soc. Sci., Montreal, Que., Canada. (1948)
de HERMIDA, Frank A., 8320 Blvd. E., Apt. 5E, P.O. Hudson Heights, North Bergen, N.J. (1946)
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DEIF, Nazih Ahmed, 2 Sharia Wassif Kamel, Doki, Giza, Egypt. (1953)
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DEINZER, Harvey T., Univ. of Florida, Col. of Bus. Admin., Gainesville, Fla. (1947)
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DELANO, Myles S., Boston Univ. Col. of Bus., Admin. Econ. Dept., Boston 15, Mass. (1949)
DELAPLANE, Walter H., Texas A. and M. Col., College Station, Tex. (1938)
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DEWHURST, J. Frederic, Twentieth Century Fund, 330 W. 42nd St., New York 10, N.Y. (1934)
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DIAS CARNEIRO, O. A., Ministerio das Relacoes Exteriores, Rio de Janeiro, Brazil. (1948)
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DICKENS, Paul D., Treas. Dept., Office of Int. Fin., Washington, D.C. (1930)
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DIGAN, Josephine M. (Mrs. T. J.), c/o Lt. T. J. Digan. Jr., U. S. Naval Shipyard, Plann. and Est., Pearl Harbor, Hawaii. (1950)
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DILLEY, Charles A., American Con. Gen., Frankfurt/M., APO 757, c/o Postmaster, New York, N.Y. (1950)
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DOLINS, Stanley L., 2101 F St., N.W., Washington, D.C. (1952)
DOLLEY, James C., 2106 Elton Lane, Austin, Tex. (1928)
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DONOVAN, Clement H., Univ. of Florida, Col. of Bus. Admin., Gainesville, Fla. (1933)
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DOYLE, George A., 43 Putnam Ave., Tarrytown, N.Y. (1947)
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DRAPER, Ernest G., Bd. of Gov. of the Fed. Res. System, Washington 25, D.C. (1921)
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ELDER, Robert F., 32 Peirce Rd., Wellesley Hills, Mass. (1930)
ELDRIDGE, Douglas H., 7604 Aberdeen Pl., Bethesda, Md. (1946)
ELIADES, Evangeles, Int. Monetary Fund, 1818 H St., N.W., Room 704, Washington 6, D.C. (1949)
ELIAS, Robert, 1830 Manor Dr., Union, N.J. (1951)
ELIOT, Clara, Barnard Col., New York 27, N.Y. (1922)
*ELKIN, David B., 872 E. 172nd St., New York 60, N.Y. (1951)
ELLENBERG, Martin, 1500 Longfellow Ave., New York 60, N.Y. (1948)
**ELLENBOGEN, Gladys C. (Mrs. Jack), 819 W. Dayton St., Madison 5, Wis. (1945)
ELLENBOGEN, Jack, 819 W. Dayton St., Madison 5, Wis. (1947)
ELLER, Cornelius A., Canisius Col., 2001 Main St., Buffalo 8, N.Y. (1952)
**ELLICKSON, J. C., 3420 McKinley St., N.W., Washington 15, D.C. (1945)
ELLICKSON, Katherine P. (Mrs. J. C.), 3420 McKinley St., N.W., Washington 15, D.C. (1945)
ELLIOTT, Curtis M., Univ. of Nebraska, Dept. of Econ., Lincoln, Neb. (1936)
ELLIOTT, Edith A., Univ. of Cincinnati, Col. of Bus. Admin., Cincinnati, Ohio. (1941)
ELLIOTT, George A., Univ. of Toronto, Toronto, Ont., Canada. (1926)
ELLIOTT, Margaret, Univ. of Michigan, Sch. of Bus. Admin., Ann Arbor, Mich. (1925)
ELLIOTT, Robert D., 3311 N St., N.W., Washington 7, D.C. (1947)
ELLIS, George H., Fed. Res. Bank, 30 Pearl St., Boston 6, Mass. (1949)
ELLIS, Howard S., 936 Cragmont Ave., Berkeley 8, Calif. (1930)
ELLIS, Ira T., 110 North Rd., Wilmington 3, Del. (1950)
ELLIS, Paul W., 1521 Pine Ave., Olympia, Wash. (1937)
ELLIS, Perry, Cairo-First Secy., Dept. of State, Washington 25, D.C. (1952)
ELLIS, Richard K., Iowa Wesleyan Col., Mt. Pleasant, Iowa. (1945)
ELLSWORTH, Heber M., 2156 Oregon St., Berkeley 5, Calif. (1944)
ELLSWORTH, J. Orval, 302 S. Pleasant St., Independence, Mo. (1925)
ELLSWORTH, Paul T., Univ. of Wisconsin, Dept. of Econ., Sterling Hall, Madison 6, Wis. (1928)
ELLSWORTH, Von T., Calif. Farm Bur. Fed., 2223 Fulton St., Berkeley 4, Calif. (1929)
ELSASSER, Robert W., 8004 Freret St., New Orleans, La. (1925)
ELSE, Arthur W., Wisconsin State Col., 3200 N. Downer, Milwaukee, Wis. (1951)
ELY, J. Edward, 2819 Hillcrest Dr., S.E., Washington, D.C. (1931)
ELY, Margaret H. (Mrs. Richard T.), 107 Nameaug Ave., New London, Conn. (1944)
ELY, Roy J. W., Montana State Univ., Missoula, Mont. (1928)
EMERSON, Hugh N., P.O. Box 149, Moylan, Pa. (1947)
EMERUWA, Obonnaya N., Howard Univ., Box 301, Washington 1, D.C. (1952)
EMMER, Robert E., 212 S. Mulberry St., Mansfield, Ohio. (1947)
EMMET, Boris, 300 E. 57th St., New York 22, N.Y. (1919)
EMOND, J. O., St. Joseph's Hospital, Vancouver, Wash. (1952)
ENDLER, Oscar L., 4404 46th St., N.W., Washington 16, D.C. (1940)
ENGLE, Nathanael H., Univ. of Washington, Bur. of Bus. Res., 302 Commerce Hall, Seattle, Wash. (1925)
*ENGLER, Henry, 120 14th St., New Orleans 23, La. (1952)
†ENGLISH, Donald, Cornell Univ., Ithaca, N.Y. (1911)
ENGLISH, Harry E., Carleton Col., Ottawa, Ont., Canada. (1947)
ENKE, Stephen, Univ. of California, Dept. of Bus. Admin., Los Angeles, Calif. (1940)
ENNIS, J. Harold, Cornell Col., Mt. Vernon, Iowa. (1925)
ENRICO, Raul A., Jujuy 313, Dto. L, Buenos Aires, Argentina. (1947)
ENSLEY, Grover W., Box 224-C, R.F.D. 2, Fairfax, Va. (1942)
ENTENBERG, Robert D., University Court, Apt. 40, Athens, Ga. (1952)
EPPSTON, Harold A., 267 Beech Spring Rd., South Orange, N.J. (1944)
EPSTEIN, Joseph B., 2708 30th St., S.E., Washington 20, D.C. (1946)
*EPSTEIN, Lionel, 1042 De Kalb Ave., Brooklyn 21, N.Y. (1952)
EPSTEIN, Ralph C., 41 Irving Pl., Buffalo 1, N.Y. (1922)
ERCEG, John J., 17026 Kenyon Rd., Shaker Heights 20, Ohio. (1952)
ERDMAN, Henry E., Univ. of California, Div. of Agric. Econ., Berkeley, Calif. (1918)
ERDMANN, Herbert H., 8041 Warren Ave., Wauwatosa 13, Wis. (1932)
ERICKSON, Roland A., 87 Sagamore Rd., Worcester 5, Mass. (1937)
ERICSON, Richard F., 1711 W. New York Ave., De Land, Fla. (1949)
ERIKSEN, Conrad, Kansas State Col., Manhattan, Kans. (1949)
ERION, G. L., Western State Col., Gunnison, Colo. (1946)
ERLICH, Alexander, Russian Research Center, Dudley Hall, Dunster St., Cambridge 38, Mass. (1948)
ERLON, Leo A., First Nat. Bank of St. Paul, St. Paul 1, Minn. (1946)
ERNST, Harry B., 162 Washington St., Arlington, Mass. (1950)
ERNST, Maurice C., 468 Riverside Dr., New York 27, N.Y. (1949)
ERSELCUK, Muzaffer, 2238 Union St., Lafayette, Ind. (1946)
ERTELL, Merton W., Univ. of Buffalo, Sch. of Bus. Admin., Buffalo, N.Y. (1946)
ERWIN, C. C., Univ. of Kentucky, Dept. of Agric. Econ., Lexington, Ky. (1950)
ESTABROOK, Laura, 50 W. 9th St., New York 11, N.Y. (1949)
ESTABROOK, Vincent T., 25 Varick Rd., Waban, Mass. (1940)
ESTEY, James A., 230 Russell St., West Lafayette, Ind. (1916)
ESTREM, T. S., Northern Trust Co., 50 S. La Salle St., Chicago, Ill. (1943)
EUCHARIA, Sister Maria, St. Joseph's Col. for Women, 245 Clinton Ave., Brooklyn 5, N.Y. (1946)
EULENBERG, Alexander, 110 S. Dearborn St., Chicago, Ill. (1941)
EVANS, Frank, 2774 Gonzaga St., Palo Alto, Calif. (1950)
EVANS, George H., Jr., Johns Hopkins Univ., Baltimore, Md. (1927)
EVANS, Lee S., 329 S. Williams, Denver 9, Colo. (1951)
EVANS, Roger F., 210 Fox Meadow Rd., Scarsdale, N.Y. (1942)
EVANS, Wilmoth D., 111 N. George Mason Dr., Arlington 3, Va. (1941)
EVANT, A. Theodore, 35–36 76th St., Jackson Heights, L.I., N.Y. (1947)
EVERETT, Richard, 196-28 69th Ave., Flushing 65, N.Y. (1953)
EVERETT, Winthrop E., 8 Girard Ave., West Lancaster, Pa. (1944)
EWING, Arthur, Palais des Nations, Room 354, Geneva, Switzerland. (1946)
EWING, John B., The Argonne, 1629 Columbia Rd., N.W., Washington 9, D.C. (1926)
EZEKIEL, Mordecai J. B., FAO, Viale Terme di Caracalle, Rome, Italy. (1924)

FABIAN, Tibor, Univ. of California, Ind. Logistics Res. Proj., Los Angeles 24, Calif. (1951)
FABRICANT, Solomon, Nat. Bur. of Econ. Res., 1819 Broadway, New York 23, N.Y. (1933)
FACKLER, Clarence W., New York Univ., Grad. Sch. of Bus. Admin., 90 Trinity Pl., New York 6, N.Y. (1926)
FAGAN, Elmer D., 2019 Harvard St., Palo Alto, Calif. (1927)
FAIR, Marvin L., 5928 Chestnut St., New Orleans, La. (1926)

FAIRCHILD, Fred R., Old Quarry Rd., Guilford, Conn. (1904)
FAKHROO, Kasim Ahmad, Bahrain, Arabia. (1950)
FALCK, Edward, 1625 Eye St., N.W., Washington 6, D.C. (1934)
FALCONER, John I., Ohio State Univ., Dept. of Agric. Econ., Columbus 10, Ohio. (1914)
FALICK, Abraham J., 1616 E. 50th Pl., Apt. 2E, Chicago 15, Ill. (1947)
FALK, I. S., Soc. Sec. Bd., Bur. of Res. and Statis., Washington. D.C. (1940)
FALK, Rita E., 610 W. 110th St., Apt. 7E, New York 25, N.Y. (1948)
***FAMILTON, Robert J.**, Univ. of California, Int. House, Berkeley 4, Calif. (1952)
FAND, David, 5731½ S. Kenwood Ave., Chicago 37, Ill. (1948)
FARBER, David J., 4317 First St., S.E., Washington 20, D.C. (1945)
****FARBER, Evelyn W. (Mrs. David J.)**, 4317 First St., S.E., Washington 20, D.C. (1945)
FARBO, (Mrs.) Eleanor B., 7261 113th St., Forest Hills, L.I., N.Y. (1950)
FARIOLETTI, Marius, 4822 3rd St., N., Arlington, Va. (1944)
FARLEY, John T., Gen. Elec. Co., Apparatus Dept., Mktg. Res. Div., Schenectady, N.Y. (1939)
†**FARNHAM, Wells**, Stein, Roe & Farnham, 135 S. La Salle St., Chicago, Ill. (1951)
FARNSWORTH, (Mrs.) Helen C., Food Res. Inst., Stanford Univ., Stanford, Calif. (1925)
FARRELL, John, 58 Warren Ave., Plymouth, Mass (1948)
***FARRELL, John E.**, 2068 Farwell Ave., Chicago 45, Ill. (1952)
FARREN, Marion R., 115–25 Metropolitan Ave., Kew Gardens, L.I., N.Y. (1948)
FARRIS, Paul L., Purdue Univ., Sch. of Agric., Dept. of Agric. Econ., West Lafayette, Ind. (1950)
FARWELL, Loring C., 735 Happ Rd., Northfield, Ill. (1946)
FASSBERG, Harold E., 315 N. Thomas St., Apt. 3, Arlington, Va. (1948)
FAUBEL, Arthur L., R.D. 1, Danbury, Conn. (1919)
FAUCETT, Jack G., 5536 Parkland Ct., Washington 28, D.C. (1952)
FAUCETT, P. M., Jr., Fed. Res. Bank, Res. Dept., Chicago, Ill. (1951)
FAULHABER, R. W., 1345 E. Marquette Rd., Chicago 37, Ill. (1953)
FAULKNER, Harold U., 26 Barrett Pl., Northampton, Mass. (1926)
FAUST, Lloyd M., Commerce Trust Co., Trust Dept., Kansas City 10, Mo. (1938)
FEDER, Ernest, South Dakota State Col. Agric. Exp. Sta., Brookings, S.D. (1950)
FEFFERMAN, Arthur S., 9006 Linton St., Silver Spring, Md. (1946)
FEHMERS J. M., c/o Netherland Embassy, Agency for the Min. of Fin., Hereford House, 117, Park St., London W 1, England. (1947)
FEI, Edward, American Univ. of Beirut, Dept. of Econ., Beirut, Lebanon. (1951)
FEIGENBAUM, Armand V., 23 Edward Ave., Pittsfield, Mass. (1951)
FEIGON, Gershon J., 1411 S. Tripp Ave., Chicago 23, Ill. (1946)
FEIN, Rashi, Glen Lennox, Apt. 46F, Chapel Hill, N.C. (1949)
***FEINBERG, Daniel**, 136-41 68th Dr., Kew Gardens Hills, Queens, N.Y. (1950)
****FEINN, Barbara Ann**, 126 Concord St., Waterbury, Conn. (1945)
FEINN, Norma, 126 Concord St., Waterbury, Conn. (1950)
FEINSTEIN, Lazar, 8 Sirkin St., Tel-Aviv, Israel. (1948)
FEIRSON, Aaron M., 7308 Forest Rd., Kent Village, Landover, Md. (1950)
FEIS, Herbert, Inst. for Advanced Study, Princeton, N.J. (1921)
FEIT, John F., 4341 Gunther Ave., Bronx, New York 66, N.Y. (1947)
FELDE, Leon S., 29 W. 64th St., New York 23, N.Y. (1942)
FELDMAN, David D., 435 E. 14th St., Apt. 8A, New York, N.Y. (1948)
FELDMAN, Edwin, 160 W. 87th St., New York 24, N.Y. (1950)
FELDSTEIN, Marc J., 2710 N. Lexington St., Arlington, Va. (1941)
FELIX, David, Univ. of California, Sch. of Bus. Admin., Dept. of Econ., Berkeley 4, Calif. (1950)
FELLNER, William J., 131 Edgehill Rd., New Haven, Conn. (1941)
FELS, Rendigs T., 4603 Westview Ave., Nashville 5, Tenn. (1948)
FELSENTHAL, Leonard, 4884 McArthur Blvd., Washington, D.C. (1943)
FELSTEN, Benjamin, Food Fair Stores, Inc., Allegheny Ave. and Tulip St., Philadelphia 34, Pa. (1943)
FELTON, John R., 308A Monterey, NOTS, Inyokern, China Lake, Calif. (1948)
FENNER, James, 245 W. 104th St., New York 25, N.Y. (1950)
FENNINGER, Laurence, Jr., R.F.D., Riegelsville, Pa. (1944)
FENTRESS, Calvin, 208 S. La Salle St., Chicago, Ill. (1933)
****FERBER, Marianne A. (Mrs. Robert)**, 606 S. Western Ave., Champaign, Ill. (1948)
FERBER, Robert, 606 S. Western Ave., Champaign, Ill. (1945)
FERCHAUD, Albert A., 220½ N. Rocheblave St., New Orleans, La. (1949)
FEREBEE, E. Emory, 6300 Ridgwood Ave., Chevy Chase, Md. (1929)
FERGENSON, M. C., 110–21 73rd Rd., Forest Hills, N.Y. (1946)
FERGER, Wirth F., 4635 N. Rock Spring Rd., Arlington, Va. (1935)
FERGUSON, Allen R., 10716 Douglas Ave., Silver Spring, Md. (1950)
FERGUSON, Esmond S., c/o Lord, Abbett & Co., 63 Wall St., New York 5, N.Y. (1947)
FERGUSON, John M., Univ. of Pittsburgh, Pittsburgh, Pa. (1917)
FERGUSON, Robert H., 116 Irving Pl., Ithaca, N.Y. (1942)
FERNANDEZ, J. Joseph, 6128 Arbor Rd., Long Beach 11, Calif. (1952)
FERRAN, Bernardo, c/o Banco Central de Venezuela Caracas, Venezuela. (1948)
FERRAND, Margaret M., 4125 18th Pl., N.E., Washington 18, D.C. (1944)
FERRIN, Dana H., D. Appleton-Century Co., 35 W 32nd St., New York, N.Y. (1932)
FETTER, Frank W., Northwestern Univ., Dept. of Econ., Evanston, Ill. (1923)
FETTER, Robert B., Indiana Univ., Sch. of Bus., Bloomington, Ind. (1949)
FETTER, Theodore A., 1240 N. Stuart St., Arlington 1, Va. (1930)
FETZER, John C., 4801 Alhambra Circle, Coral Gables, Fla. (1945)
FEUERLEIN, Willy J. A., 7115 Overhill Rd., Bethesda, Md. (1940)
FICEK, Karel F., 156 Brevator St., Albany, N.Y. (1926)
FICHTNER, Charles C., 238 Main St., Buffalo 2, N.Y. (1924)
FICK, John W., 30 Webster St., North Tonawanda, N.Y. (1940)
FICKER, Hermann, 9008 Flower Ave., Silver Spring, Md. (1947)
FIELD, Bertrand B., 1438 Sheridan St., N.W., Washington 11, D.C. (1945)
§**FIELD, Frederick V.**, 23 W. 26th St., New York 10, N.Y. (1934)
FIELD, Kenneth, 1 Bayard Rd., Pittsburgh 13, Pa. (1936)
FIELD, Marshall, 250 Park Ave., New York 17, N.Y. (1920)
FIELD, Maxwell, 210 Lincoln St., Boston 11, Mass. (1948)
FIER, Louis, 738 Stanley Ave., Brooklyn 7, N.Y. (1949)
FILIE, Ferruccio A., 1305 Chalmers Dr., Ann Arbor, Mich. (1945)
FILIPETTI, George, Univ. of Minnesota, Sch. of Bus., Minneapolis, Minn. (1922)
FINCK, David H., 15 Washington St., Newark, N.J. (1939)
***FINE, Gerald S.**, 190 E. 21st St., Brooklyn 26, N.Y. (1951)
FINE, Sherwood M., J5-HQ-FEC, APO 500, c/o Postmaster, San Francisco, Calif. (1947)

*FINEGAN, Marcella E., 926 Erin St., Madison 5, Wis. (1952)
*FINGADO, Roger, Antioch Col., Yellow Springs, Ohio. (1952)
FINK, Cornelius W., Dickinson Col., Carlisle, Pa. (1923)
FINK, William H., 3610 Hillegass Ave., Berkeley 5, Calif. (1949)
FINLEY, John W., 20 Earl St., Westbury, N.Y. (1943)
**FINN, Sister Isabelle Marie, Marymount Col., Salina, Kans. (1946)
FINNEGAN, Joseph H., 3350 Bronx Blvd., New York 67, N.Y. (1937)
FINNEY, Katherine, Connecticut Col., Dept. of Econ., New London, Conn. (1940)
FINSTON, Howard V., 11090 Strathmore Dr., Los Angeles 24, Calif. (1951)
FIREOVED, Elgie L., 847 Greenwood Rd., Le Mars, Iowa. (1926)
FIRESTONE, Frederic N., 312 W. 92nd St., New York, N.Y. (1950)
FIRESTONE, O. J., 62 Wayling Ave., Kingsview Park, Eastview, Ont., Canada. (1946)
FIRFER, Alexander, 4803 S. 30th St., Arlington, Va. (1943)
**FIRFER, Amy W. (Mrs. Alexander), 4803 S. 30th St., Arlington, Va. (1949)
¶FIRST, (Mrs.) Ramona K., 1920 Von Way, Reno, Nev. (1947)
FIRTH, G. G., Univ. of Tasmania Lib., Box 647 C, G.P.O., Hobart, Tasmania. (1949)
FIRTH, Norman C., 290 Broadway, New York, N.Y. (1944)
FISCHER, Harold, Franklin and Marshall Col., Lancaster, Pa. (1932)
FISCHER, Monroe C., Bucknell Univ., Dept. of Econ., Lewisburg, Pa., (1949)
FISCHMAN, Leonard L., Econ. Dev. Admin., San Juan, P.R. (1948)
FISH, Hy, 137 Rehov Hayarkon, Tel-Aviv, Israel. (1948)
FISHBURN, John T., 9207 Kensington Pkwy., North Chevy Chase, Md. (1939)
FISHER, Allan G. B., 1818 H St., N.W., Washington, D.C. (1943)
FISHER, Allan J., 2309 Apache St., Hyattsville, Md. (1937)
FISHER, Clyde O., Wesleyan Univ., Middletown, Conn. (1916)
FISHER, Ernest M., Columbia Univ., Sch. of Bus., 116th and Broadway, New York 27, N.Y. (1923)
FISHER, Gene H., 1701 Penmar Ave., Venice, Calif. (1949)
FISHER, Gerald C., 7048 Bales, Kansas City 30, Mo. (1945)
FISHER, Glenn W., 1551 Jefferson St., Madison 5, Wis. (1951)
FISHER, Janet A. (Mrs. Burton R.), University Houses, Apt. 6A, Madison 5, Wis. (1941)
FISHER, Joseph L., 2608 24th St., N., Arlington 7, Va. (1947)
FISHER, Paul, 237 Southampton Dr., Silver Spring, Md. (1945)
FISHER, Ralph H., 5209 Nahant St., Washington 16, D.C. (1951)
FISHER, Thomas K., 2 Wall St., New York 5, N.Y. (1949)
FISHER, Waldo E., Univ. of Pennsylvania, Wharton Sch., W-199 Dietrich Hall, Philadelphia 4, Pa. (1926)
FISHER, Walter D., Kansas State Col., Dept. of Econ., Manhattan, Kans. (1951)
FISHER, W. Halder, Fed. Trade Comm., Washington, D.C. (1947)
**FISHMAN, Betty G. (Mrs. Leo), 204 Wilson Ave., Morgantown, W. Va. (1941)
FISHMAN, Leo, 204 Wilson Ave., Morgantown, W. Va. (1941)
FITCH, John A., 39 Claremont Ave., New York 27, N.Y. (1910)
FITCH, Lyle C., 75 Highland Ave., Middletown, Conn. (1939)
FITZGERALD, J. Anderson, Univ. of Texas, Austin, Tex. (1914)
FITZGERALD, Lloyd E., Univ. of Detroit, Col. of Com. and Fin., Detroit, Mich. (1935)
FITZGERALD, Mark J., Univ. of Notre Dame, Notre Dame, Ind. (1949)
FITZGERALD, Thomas J., Jr., 110 Bellevue Pl., Yonkers 3, N.Y. (1949)
FITZGERALD, W. Lyle, Exchange Bldg., Room 116, Union Stock Yards, Chicago 9, Ill. (1949)
FITZPATRICK, James, 629 W. 115th St., New York 25, N.Y. (1948)
FitzPATRICK, Paul J., 4119 13th Pl., N.E., Washington 17, D.C. (1939)
FITZSIMMONS, Cleo, Purdue Univ., Home Econ. Bldg., West Lafayette, Ind. (1945)
*FLAGG, Denis A., 1420 Spruce St., Berkeley 9, Calif. (1951)
FLANAGAN, William W., Woodstock Col., Woodstock, Md. (1948)
FLANDERS, Dwight P., Univ. of Illinois, 117 David Kinley Hall, Urbana, Ill. (1937)
FLANDERS, (Mrs.) June, 1939 Stuart, Berkeley 3, Calif. (1947)
FLANDERS, Ralph E., Senate Office Bldg., Room 311, Washington, D.C. (1932)
*FLECHSIG, Theodore G., Johns Hopkins Univ., Dept of Polit. Econ., Baltimore 18, Md. (1951)
FLETCHER, Daniel O., USS Philippine Sea CV-47, c/o FPO, San Francisco, Calif. (1952)
FLETCHER, John L., Jr., 2 Shaler Lane, Cambridge, Mass. (1951)
FLETCHER, Max E., Leadore, Idaho. (1952)
FLINK, Salomon, Univ. of Newark, Newark, N.J. (1942)
FLINN, Bernard W., 1636 Charles St., Rockford, Ill. (1932)
FLORINSKY, Michael T., Columbia Univ., Fayerweather Hall, New York 27, N.Y. (1934)
FLOYD, Joe S., Univ. of Florida, Col. of Bus. Admin., Gainesville, Fla. (1949)
¶FLUBACHER, Joseph F., 424 Ashdale St., Philadelphia, Pa. (1938)
FLUKER, J. Robert, 10605 Georgia Ave., Silver Spring, Md. (1948)
FLUMIANI, C. M., Santa Clara Univ., Santa Clara, Calif. (1949)
FLYNN, John T., 35-11 222nd St., Bayside, L.I., N.Y. (1938)
FLYNN, Oscar R., Jr., Deerfield Packing Corp., Bridgeton, N.J. (1943)
FOA, Bruno, 1435 Lexington Ave., New York 28, N.Y. (1947)
FOERY, Raymond W., 6 E. Mercer Ave., Llanerch, Del. Co., Havertown P.O., Pa. (1927)
FOLEY, James H., Jr., 20 Summer St., Providence, R.I. (1940)
FOLEY, Mary J., Sacramento State Col., Sacramento 19, Calif. (1945)
FOLK, O. Harold, 3351 Stephenson Pl., N.W., Washington 15, D.C. (1946)
FOLSOM, Marion B., 343 State St., Rochester, N.Y. (1924)
FOLZ, William E., 510 E. C St., Moscow, Idaho. (1944)
FORBUSH, Dascomb R., 1725 Orrington Ave., Evanston, Ill. (1950)
**FORBUSH, Dorothy (Mrs. Dascomb R.), 1725 Orrington Ave., Evanston, Ill. (1952)
FORD, Caroll W., Babson Inst. of Bus. Admin., Babson Park, Mass. (1937)
FORD, James W., Columbia Univ., Hamilton Hall, Box 5, New York 27, N.Y. (1952)
FORD, Robert S., 2100 Scottwood, Ann Arbor, Mich. (1929)
FORDHAM, Herbert, Oak Farm, Greenport, L.I., N.Y. (1910)
FOREGGER, (Mrs.) Eleanor H., 2373 N. 101st St., Milwaukee 13, Wis. (1947)
FOREMAN, William J., Box 36, Kensett, Ark. (1949)
FORJOHN, Henry B., 202 Colonial Bldg., Allentown, Pa. (1944)
¶FORKOSCH, Morris D., Brooklyn Law Sch., 375 Pearl St., Brooklyn 1, N.Y. (1939)
FORMAN, Flora, P.O. Box 503, Bridgeport, Conn. (1953)
FORNER, Curtis F., 21 W. Roselle Ave., Roselle Park, N.J. (1950)
FORSYTH, F. Howard, Munitions Bd., 3D826 Pentagon Bldg., Washington, D.C. (1947)
FORTH, Milburn L., 908 Livingston Ave., Arlington 5, Va. (1944)
FOSTER, J. Rhoads, E. Allendale Ave., Allendale, N.J. (1935)
FOSTER, Major B., New York Univ., Sch. of Com., Washington Sq., New York 3, N.Y. (1939)
FOSTER, Merle A., 1209 B Carolina, Malate, Manila, Philippines. (1951)

FOURAKER, Lawrence E., Pennsylvania State Col., Dept. of Econ. and Com., State College, Pa. (1952)
FOURNIER, Leslie T., 164 N. Van Dien Ave., Ridgewood, N.J. (1935)
FOWLE, Geraldine E., 1020 Newton St., N.E., Washington 17, D.C. (1952)
FOWLER, Charles B., Quaker Village, Chappaqua, N.Y. (1949)
FOX, Bertrand, 56 Beaver St., Room 92, New York 4, N.Y. (1934)
FOX, Harland G., 928 Franklin Ter., Minneapolis, Minn. (1949)
FOX, Kirk, 1809 Carle Dr., Urbana, Ill. (1949)
FOX, Lawrence A., 5236 N. 11th Rd., Arlington 5, Va. (1945)
FOX, Martin J., 2400 16th St., N.W., Washington, D.C. (1924)
FOYTIK, Jerry, Col. of Agric., Div. of Agric. Econ., Davis, Calif. (1948)
FRAIN, H. La Rue, Univ. of Pennsylvania, Wharton Sch., Econ. Dept., Philadelphia, Pa. (1923)
FRAINE, Harold G., Univ. of Wisconsin, Sch. of Com., Sterling Hall, Madison 6, Wis. (1929)
FRANCE, Robert R., 221C Marshall St., Princeton, N.J. (1948)
FRANCE, Royal W., 104 E. 40th St., New York 16, N.Y. (1943)
FRANCIS, Bion H., Olin Industries, Inc., 275 Winchester Ave., New Haven, Conn. (1947)
FRANCIS, Brother Clement, Manhattan Col., New York, N.Y. (1934)
FRANCIS, Cyril L., Westboro P.O., Ottawa, Ont., Canada. (1948)
FRANCIS, James A., 419 Wagner Dr., Washington, Ill. (1951)
FRANCIS, Sister M. Catherine, Archbishop Cushing Col., 535 Boylston St., Brookline 46, Mass. (1949)
FRANCK, Peter G., Haverford Col., Haverford, Pa. (1944)
FRANE, Lenore, 303 E. 27th St., Apt. 3B, New York, N.Y. (1945)
FRANK, Helmut J., 61-49 Dry Harbor Rd., Middle Village 79, N.Y. (1951)
FRANK, Henry J., P.O. Box 104, Princeton, N.J. (1950)
FRANK, Isaiah, 2418 N. Rockingham St., Arlington, Va. (1945)
FRANK, William A., 865 S. Greenbriar St., Arlington 4, Va. (1947)
FRANK, William F., Tech. Col., Normanton Rd., Derby, England. (1946)
FRANKEL, Marvin, 1630 Alabama Dr., Apt. A-1, Urbana, Ill. (1950)
FRANKEL, (Mrs.) Patricia, 102 Newport Ave., Brookline, Reading, Pa. (1951)
FRANKEL, S. Herbert, Knoll House, Hinksey Hill, Oxford, England. (1943)
FRANKLIN, B. M., 300 W. 108th St., Apt. 2E, New York 25, N.Y. (1946)
FRANKLIN, Jean M., Milltown Rd., South River, N.J. (1950)
FRANKLIN, William B., 78-11 35th Ave., Apt. 4 I, Jackson Heights, L.I., N.Y. (1949)
FRASER, Herbert W., Lehigh Univ., Dept. of Econ., Christmas-Saucon Hall, Bethlehem, Pa. (1948)
FRAZEE, Gilford, P.O. Box 61, New Martinsville, W. Va. (1950)
FRAZER, George E., 400 N. Michigan Ave., Chicago, Ill. (1935)
*FRAZER, William J., 456 Riverside Dr., Apt. 1C, New York, N.Y. (1951)
**FRECHTLING, Cynthia S. (Mrs. John A.), 3524 S. Wakefield St., Arlington, Va. (1953)
FRECHTLING, John A., 3524 S. Wakefield St., Arlington, Va. (1949)
FREDERICK, John H., P.O. Box 208, Kensington, Md. (1952)
FREDLAND, John R., U. S. Naval Acad., Dept. of Econ., Hist., and Gov., Annapolis, Md. (1948)
FREDRICKSON, John W., 5344 N. Christiana, Chicago 25, Ill. (1948)
FREEDMAN, Arthur M., Bates Col., Dept. of Econ., Lewiston, Me. (1940)
FREEDMAN, Bernard N., R.F.D. 4, Vienna, Va. (1949)
FREEDMAN, Elisha C., 132 Mark Twain Dr., Hartford, Conn. (1951)
FREEDMAN, Robert, Jr., Colgate Univ., Dept. of Econ., Hamilton, N.Y. (1948)
FREEMAN, Cornelia G. (Mrs. L. L.), 306 Fifth St., Racine, Wis. (1946)

FREEMAN, Edwin S., 12 Benton St., Wellesley, Ma (1924)
§FREEMAN, Herbert C., Pickwick Arms Hotel, Gre wich, Conn. (1917)
FREEMAN, Ralph E., Massachusetts Inst. of Tec Cambridge, Mass. (1930)
FRENCH, Robert W., Tulane Univ., Col. of Co and Bus. Admin., New Orleans, La. (1934)
FREUND, Rudolf E., State Col. Sta., Box 5075, Ralei N.C. (1947)
FREUND, William C., 295 Orange Ave., Irvington N.J. (1950)
FRICKEY, Edwin, Harvard Univ., Dept. of Eco Cambridge, Mass. (1924)
FRIDAY, Charles B., Oregon State Col., Dept. Econ., Corvallis, Ore. (1946)
FRIED, Edward R., 10410 Brookmoor Ct., Sil Spring, Md. (1947)
FRIEDLAENDER, Heinrich E., Harpur Col., St Univ. of New York, Endicott, N.Y. (1948)
FRIEDLAND, Seymour, Suite 2A, 47 Inman Cambridge, Mass. (1950)
FRIEDMAN, Bernard H., Univ. of Pittsburgh, De of Econ., Pittsburgh 13, Pa. (1948)
FRIEDMAN, Clara H. (Mrs. Milton), 1722 Mich William Rd., Merrick, L.I., N.Y. (1946)
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FRIEDMAN, Harry G., 25 E. 86th St., Apt. 15F, N York, N.Y. (1908)
**FRIEDMAN, Milton, 1722 Michael William R Merrick, L.I., N.Y. (1951)
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FRIEDRICH, William G., 601 19th St., N.W., Washi ton 6, D.C. (1940)
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FRIESEN, Harold N., 1136 Colling Wood, Apt. 4 Detroit, Mich. (1950)
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FRISINGER, Hubert H., 2301 Woodside Rd., A Arbor, Mich. (1946)
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FRITZ, David, c/o United Nations Korean Rec Agency, Mitsubishi Naka No. 11 Bldg., Tok Japan. (1952)
FRITZ, Wilbert G., 305 N. Kenmore St., Arlingt Va. (1930)
FRIZOL, Sylvester M., Loyola Univ., 820 N. Michi Ave., Chicago 11, Ill. (1940)
FROEHLICH, Walter, Marquette Univ., Milwauk Wis. (1938)
FROHMAN, Charles E., Hinde and Dauch Paper Sandusky, Ohio. (1946)
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FROMAN, Lewis A., Russell Sage Col., Troy, N (1930)
FUCHS, Emanuel R., 603 Miles Ave., Billings, Mc (1950)
FUCHS, Ralph F., Indiana Univ., Sch. of Law, Bloo ington, Ind. (1946)
*FUCHS, Victor R., 350 First Ave., New York 10, N (1950)
FUERST, E., P.O.B. 2428, Tel-Aviv, Israel. (1950)
FUJIOKA, Masao, c/o Budget Bur., Min. of F Shinjuku-ku, Tokyo, Japan. (1950)
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FULLBROOK, Earl S., Univ. of Nebraska, Linco Neb. (1946)
FULLER, Denton A., Jr., Citizens Nat. Bank, We ville, N.Y. (1936)
FULLER, Douglas R., c/o Northern Trust Co., 50 LaSalle St., Chicago, Ill. (1943)
FULLER, Horace J., Ontario Col. of Pharm., 46 G rard St. E., Toronto, Ont., Canada. (1949)
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FULTON, Roger H., 1257 Prospect Dr., Wilmingt Del. (1953)
FUNK, Arthur L., 53 First Ave., Greenville, Pa.

URLONG, Edward C., John B. Stetson Univ., De Land, Fla. (1950)
FURNISS, Edgar S., Grad. Sch., Yale Sta., New Haven, Conn. (1915)
URTH, J. Herbert, 719 Van Buren St., N.W., Washington 12, D.C. (1942)
USFELD, Daniel R., 6 James St., Farmingdale, N.Y. (1947)

ADEHOLT, Bjorn, Pacific Power and Light Co., Pub. Serv. Bldg., Portland 4, Ore. (1941)
AFFEY, John D., 1311 Lexington Ave., Pasadena 6, Calif. (1940)
AGLIARDO, Domenico, Univ. of Kansas, Dept. of Econ., Lawrence, Kans. (1925)
AINER, Walter D., 11142 90th Ave., Edmonton, Alta., Canada. (1949)
AINES, Tilford C., Fed. Res. Bank, 33 Liberty St., New York 45, N.Y. (1949)
AINSBRUGH, Martin R., Nat. Ind. Conf. Bd., 247 Park Ave., New York, N.Y. (1946)
AL, Nicholas P., 3636 16th St., N.W., Apt. B839, Washington, D.C. (1950)
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ALBREATH, C. Edward, 5300 Sherrill Ave., Chevy Chase 15, Md. (1934)
ALE, Hoyt R., 669 Sturtevant Dr., Sierra Madre, Calif. (1938)
ALENSON, Walter, Univ. of California, Inst. of Ind. Rela., Berkeley, Calif. (1938)
ALERSTEIN, David H., 65-38 Booth St., Rego Park, N.Y. (1948)
ALIGNIANA, Lucas M., Arenales 2439, Buenos Aires, Argentina. (1942)
ALLAGHER, John O., Box 129, Wesleyan Sta., Middletown, Conn. (1949)
ALLMAN, Robert E., 4205 12th Rd., Apt. B, South Arlington, Va. (1949)
ALLOWAY, Lee, 461 Webster Ave., Winter Park, Fla. (1909)
ALLOWAY, Leon J., 15 Twinlawns Ave., Hicksville, N.Y. (1934)
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GALPIN, Henry L., 145 Everit St., New Haven 11, Conn. (1911)
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AMBLE, Philip L., Massachusetts State Col., Dept. of Econ., Amherst, Mass. (1945)
AMBS, John S., 13 Griffen Rd., Clinton, N.Y. (1939)
AMSER, Howard G., 357 Bleecker St., New York 14, N.Y. (1945)
ANE, Frank H., Northwestern Univ., Sch. of Com., Evanston, Ill. (1934)
ANZ, Alexander, Naciones Unides CEPAL, Av. Providencia 871, 7 piso, Santiago, Chile. (1950)
ARBALINSKI, Walter, NSR & DF Naval Sup. Depot, Bayonne, N.J. (1949)
ARBARINO, Joseph W., Univ. of California, Inst. of Ind. Rela., Berkeley, Calif. (1947)
ARBER, Joseph M., Chem. Sec., Hdq., 3rd Army, Fort McPherson, Ga. (1952)
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ARDAM, Joseph W., Jr., 5 Hoffman St., Maplewood, N.J. (1949)
ARDNER, Alexander J., 42 Fremont St., Bridgeport, Conn. (1950)
ARDNER, Clinton L., 195 Broadway, Room 1239, New York 7, N.Y. (1947)
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ARDNER, Walter R., 115 W. Leland St., Chevy Chase 15, Md. (1940)
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ARFIELD, Frederick M., Koppers Co., Sales Dept., Pittsburgh 19, Pa. (1952)
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GARRIDO-TORRES, José, Rua Lacerda Coutinho 9, Copacabana, Rio de Janeiro. Brazil. (1944)
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GARVER, Earl S., Manchester Col., Dept. of Econ., North Manchester, Ind. (1940)
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GASPAR, Marcel P., 1016 Hudson Ave., South Bend, Ind. (1950)
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GAWTHROP, Paul R., Marietta Col., Dept. of Econ., Marietta, Ohio. (1948)
GEARTY, Patrick, St. Thomas Col., St. Paul 1, Minn. (1949)
GEE, Wilson, Univ. of Virginia, Sch. of Rural Econ., Charlottesville, Va. (1923)
GEETING, Roy E., Univ. of Tampa, Dept. of Econ., Tampa 6, Fla. (1947)
GEICHES, Marcus M., 57-11 63rd St., Maspeth, N.Y. (1949)
GEISENHEIMER, Alexander L., Univ. of South Carolina, Columbia, S.C. (1951)
GEISERT, Wayne F., Manchester Col., Econ. Dept., North Manchester, Ind. (1949)
GEISLER, Rudolf P., Theresienpost, Postschliessfach 7, Bamberg, Germany. (1951)
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GELFAND, Jack E., Fed. Trade Comm., Bur. of Ind. Econ., Washington 25, D.C. (1947)
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GEMMILL, Paul F., Univ. of Pennsylvania, 28 Logan Hall, Philadelphia, Pa. (1925)
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GENOVESE, Francis C., 1400 E. Wisconsin Ave., Apt. 1, Appleton, Wis. (1948)
GEORGE, Edwin B., Dun and Bradstreet, Inc., 99 Church St., New York, N.Y. (1946)
GEORGE, Henry C., Standard Oil Co. (Ohio), Sales Res. Dept., 1530 Midland Bldg., Cleveland 15, Ohio. (1946)
GEORGE, Lowell N., Muskingum Col., Dept. of Econ., New Concord, Ohio. (1952)
GEORGE, W. D., People's Sav. Bank Bldg., Pittsburgh, Pa. (1912)
GERARD, Irwin, Fed. Media, and Concil. Serv., 1023 Federal Bldg., Detroit 26, Mich. (1947)
GERARD, Roy, 62 Leroy St., New York 14, N.Y. (1949)
GERBER, Abraham, 5620 Chillum Heights Dr., Hyattsville, Md. (1949)
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GERDY, Irving, 242 E. 19th St., New York 3, N.Y. (1950)
GERLANDO, Peter, 1213 Gallatin St., N.W., Washington 11, D.C. (1943)
GERMAN, Jeremiah J., 1125 E. 61st., Chicago 37, Ill. (1949)
GERMANE, Gayton E., Stanford Univ., Grad. Sch. of Bus., Stanford, Calif. (1949)
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GERNAND, Arthur C., 2000 Connecticut, Washington, D.C. (1942)

GERRISH, (Mrs.) Catherine R., 60 Brattle St., Cambridge, Mass. (1936)
GERSCHENKRON, Alexander, Harvard Univ., Dept. of Econ., Cambridge 38, Mass. (1943)
GERSTING, John M., John Carroll Univ., Dept. of Econ., Cleveland, Ohio. (1945)
**GERTLER, Ann S. (Mrs. Maynard), R.D. 3, Quarryville, Pa. (1952)
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GETTELL, Richard G., 270 Park Ave., New York 17, N.Y. (1938)
GETZIN, Edmund E., 1210 Floral St., N.W., Washington 12, D.C. (1947)
*GHAZALA, Evans E., 14 E. 12th Ave., Apt. 4, Columbus 1, Ohio. (1953)
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GHIARDI, John L., c/o Mrs. Hall, Admin. Asst. to Dir., Office of Int. Fin., U. S. Treas., 15th and Pennsylvania Ave., Washington 25, D.C. (1948)
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GIBSON, Roland, Univ. of Illinois, 414 David Kinley Hall, Urbana, Ill. (1947)
GIBSON, Weldon B., 515 Chaucer Ave., Palo Alto, Calif. (1946)
GIDEONSE, Harry D., 1 Amherst Rd., Great Neck, L.I., N.Y. (1925)
GIDEONSE, Max, Rutgers Univ., Dept. of Econ., New Brunswick, N.J. (1930)
GIFFEY, Richard C., 103 Hunter Circle, Apt. A, Oak Ridge, Tenn. (1949)
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GIFFORD, Guy C., Amer. Inst. for Econ. Res., Great Barrington, Mass. (1950)
GIGUERE, Madeleine D., 98 Webster St., Lewiston, Me. (1950)
GILBERT, Charles, 4333 46th St., Long Island City 4, N.Y. (1949)
GILBERT, Donald W., Univ. of Rochester, Dept. of Econ., Rochester, N.Y. (1934)
GILBERT, (Mrs.) Hilda K., 66, TVA Village 1, Sheffield, Ala. (1941)
GILBERT, Horace N., California Inst. of Tech., Pasadena 4, Calif. (1928)
GILBERT, Milton, 2 rue Andre Pascal, Paris 16, France. (1939)
GILBERT, Richard V., 300 Central Park W., 14G, New York 24, N.Y. (1945)
GILES, James B., Rice Inst., Dept. of Econ., Room 313 Lovett Hall, Houston, Tex. (1947)
GILHOUSEN, Klein C., 505 Ohio St., Fairborn, Ohio. (1945)
GILLAM, Cornelius W., Univ. of Chicago, Sch. of Bus., Chicago 37, Ill. (1946)
GILLESPIE, Jesse R., 1112 Beech St., South Pasadena, Calif. (1928)
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GILLETT, Roy L., 164 Orchard St., Delmar, N.Y. (1920)
GILLIES, James M., Univ. of California, Sch. of Bus. Admin., Los Angeles 24, Calif. (1952)
GILLILAND, Charles E., Jr., Washington Univ., Sch. of Bus. and Pub. Admin., St. Louis 5, Mo. (1949)
GILLIM, Marion H., 1505 Griffith Ave., Owensboro, Ky. (1940)
GILLINGHAM, J. Benton, Univ. of Washington, Inst. of Labor Econ., Seattle 5, Wash. (1946)
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GILLIS, Harry A., Jr., 202 6610 Wilson Blvd., Falls Church, Va. (1948)
GILLMAN, Joseph M., 116 Poe St., Hartsdale, N.Y. (1944)
GILLMORE, Curry W., 4509 D Fairview Ave., Baltimore 6, Md. (1949)
GILMAN, Donald L., 1709 Harvard St., N.W., Washington, D.C. (1952)
GILMARTIN, William M., Int. Bank for Recon. and Dev., Res. Dept., 1818 H St., N.W., Washington 6, D.C. (1946)
GILMORE, Eugene A., American Embassy, Lima Peru. (1929)
*GILSON, J. Clayton, Gunton, Man., Canada. (1951
†GILSON, Mary B., 1 Cobb Ter., Chapel Hill, N.C (1931)
¶GINKEL, Alfred O., 41 Lilac Dr., Apt. 1, Rocheste 20, N.Y. (1950)
GINSBURG, Woodrow L., United Rubber Workers Bldg., High St. at Mill, Akron 8, Ohio. (1946)
GINZBERG, Eli, Columbia Univ., Sch. of Bus., New York 27, N.Y. (1931)
GIRARD, Richard A., New York Univ., Washingto Square Col., Dept. of Econ., New York 3, N.Y (1930)
GISH, Ralph B., 400 Arballo, San Francisco 27, Calif (1949)
GISLASON, Conrad, Int. House, Chicago 37, Ill. (1952
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GLADE, Frederic H., New York Univ., Sch. of Com. Washington Sq., New York 3, N.Y. (1942)
GLADSTEIN, Eli, 163-44 17th Ave., Whitestone 57, L.I N.Y. (1946)
GLAESER, Martin G., Univ. of Wisconsin, 314 Sterlin Hall, Madison 6, Wis. (1920)
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GLASER, Ezra, 305 E. George Mason Rd., Fall Church, Va. (1938)
GLASSMAN, Alfred R., 161 Irwin St., Brooklyn 35 N.Y. (1937)
GLASSMAN, Sidney, United Nations, Dept. of Econ Affairs, Lake Success, N.Y. (1946)
GLATTHAR, George E., Jr., c/o Art Metal Co., 181 E. 40th St., Cleveland 3, Ohio. (1949)
GLAVES, Cecil R., Illinois Inst. of Tech., 33rd an Federal, Chicago 16, Ill. (1937)
GLEISSER, Marcus D., 10714 Bryant Ave., Clevelan 8, Ohio. (1949)
GLICK, Milton L., 1121 E. 60th St., Chicago 37, Il (1949)
GLICKFELD, Morris D., Univ. of Washington, Dept of Econ., Seattle 5, Wash. (1948)
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GLIDDEN, Robert T., 5927 N. Kenmore Ave., Chicago Ill. (1940)
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GLOSTER, Jesse E., 4818 Clover St., Houston 21 Tex. (1951)
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GOEHRING, E. E., Valparaiso Univ., Valparaiso, Ind (1946)
GOELL, Robert S., 58 Grove Ave., Cedarhurst, N.Y (1950)
GOENKA, R. P., 19, Belvedere Rd., Calcutta 27, India (1949)
GOETZ, Billy E., Allen Rd., R. 1, Yellow Springs Ohio. (1936)
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GOFF, John H., 1021 E. Clifton Rd., N.E., Atlanta Ga. (1942)
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GOLDBERG, Joseph P., 1114 Osage St., Silver Spring, Md. (1944)
GOLDBERG, Kalman, Bradley Univ., Dept. of Econ., Peoria, Ill. (1949)
GOLDBERG, Rashelle, 101 W. 80th St., New York 24, N.Y. (1944)
GOLDBERG, Samuel P., 32 Brook Rd., Greenacres, Valley Stream, L.I., N.Y. (1946)
GOLDBERG, Simon A., Dominion Bur. of Statis., Res. and Dev. Div., Ottawa, Ont., Canada. (1952)
GOLDEN, Philip, 251 W. 68th St., New York 23, N.Y. (1947)
GOLDENBERG, Leon, U. S. Embassy, Paris, France. (1936)
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GOLDFIELD, Edwin D., Bur. of the Census, Pop. and Hous. Div., Washington 25, D.C. (1941)
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GOLDHAMMER, Bernard, 3014 N.E. 30th Ave., Portland 12, Ore. (1940)
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GOLDNER, Fred H., 1756 N. Wells St., Chicago, Ill. (1950)
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GOLDSTEIN, George S., c/o U.E.R. and M.W.A., 930 F St., N.W., Washington, D.C. (1952)
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GOLDWATER, Melvin, 69-83 136th St., Kew Garden Hills, L.I., N.Y. (1942)
GOLEMBE, Carter H., 3137 Martha Custis Dr., Alexandria, Va. (1947)
GOLIGHTLY, T. H., Nat. Bank of Com., 4010 Madison St., Chicago 24, Ill. (1941)
GOLINKO, Jerome I., 1776 Broadway, New York 19, N.Y. (1949)
GOMBERG, Mandel, 6851 S. Clyde, Chicago 49, Ill. (1948)
GOMBERG, William, Int. Ladies' Garment Workers' Union, 1710 Broadway, New York 19, N.Y. (1946)
GOMEZ, (Mrs.) Ana Mas, American Embassy, Reforma 45, Mexico D.F. (1947)
GONZALEZ, Richard J., Humble Oil and Refin. Co., 1365 Humble Bldg., Houston, Tex. (1935)
GOODBAR, Joseph E., 146 Dartmouth St., Portland, Me. (1937)
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GOODEN, Orville T., Hendrix Col., Conway, Ark. (1920)
GOODHUE, Everett W., Principia Col., Elsah, Ill. (1905)
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GORDON, Myron J., M.I.T., Sch. of Ind. Mgt., Sloan Bldg., Cambridge 39, Mass. (1948)
GORDON, Nathan N., 321 N. George Mason Dr., Arlington, Va. (1945)
GORDON, Robert A., 45 San Mateo Rd., Berkeley 7, Calif. (1936)
GORDON, Wendell C., Univ. of Texas, Econ. Dept., Austin 12, Tex. (1941)
GORHAM, James E., 8012 Glenside Dr., Takoma Park 12, Md. (1946)
GORINSON, Morris, 8434 Tenth Ave., Silver Spring, Md. (1947)
GORLITZ, Samuel J., 6805 Laverock Ct., Bethesda 14, Md. (1947)
GORSKI, Roman von S., 310 W. 55th St., Apt. 5A, New York 19, N.Y. (1932)
GORT, Michael, Univ. of California, Dept. of Econ., Berkeley 4, Calif. (1946)
GORTER, Wytze, Univ. of California, Dept. of Econ., Los Angeles 24, Calif. (1948)
GOSFIELD, Amor, Univ. of Pennsylvania, Econ. Dept., Philadelphia 4, Pa. (1948)
GOSTOMSKI, Adam, Chestnut Hill Rd., North Stamford, Conn. (1945)
GOTSCHALL, Gale P., 1646 Preston Rd., Alexandria, Va. (1949)
GOTSCHALL, John C., G-J HQ, FEC, APO 500, c/o Postmaster, San Francisco, Calif. (1946)
GOTT, Philip P., 221 N. La Salle St., Chicago 1, Ill. (1941)
GOTTLIEB, Elias, 229-18 Kingsbury Ave., Flushing, N.Y. (1946)
GOTTLIEB, Irving, 860 Bryant Ave., New York 59, N.Y. (1950)
GOTTLIEB, Jerry R., 756 Junior Ter., Chicago 13, Ill. (1951)
GOTTSEGEN, Jack J., 3318 Stephenson Pl., N.W., Washington 15, D.C. (1934)
GOUDRIAAN, Jan, Univ. of Pretoria, Vermeulenstreet 239, Pretoria, S. Africa. (1935)

GOULD, Burton M., 1705 P St., N.W., Apt. 32, Washington 6, D.C. (1949)
GOULD, E. Noah, Univ. of Bridgeport, Dept. of Ind. Rela., Bridgeport, Conn. (1949)
GOULD, Jacob M., Market Statis., Inc., 432 Fourth Ave., New York, N.Y. (1952)
GOULD, Joseph S., 24 Kent Way, Newark, Del. (1930)
*GOULDING, William M., 5810 Drexel Ave., Chicago 37, Ill. (1950)
GOURVITCH, Alexander, 25 Cooper St., New York 34, N.Y. (1926)
GOW, J. Steele, Maurice and Laura Falk Found., Farmers Bank Bldg., Pittsburgh 22, Pa. (1935)
GRAD, Andrew J., 66-12 48th Ave., Woodside 77, N.Y. (1946)
**GRAD, Tamara E. (Mrs. Andrew J.), 66-12 48th Ave., Woodside 77, N.Y. (1948)
GRADIN, Theodore I., 417 40th St., Brooklyn 32, N.Y. (1953)
GRADY, (Mrs.) Eleanor H., R. 134, South Dennis, Mass. (1921)
GRADY, Henry F., Park Lane Apts., 1100 Sacramento St., San Francisco 8, Calif. (1927)
GRAHAM, Benjamin, 120 Wall St., New York, N.Y. (1934)
GRAHAM, Charles R., 460 Grosvenor Ave., Westmount, Que., Canada. (1951)
GRAHAM, H. D., Fresno State Col., Dept. of Econ., Fresno 4, Calif. (1947)
GRAHAM, John E. L., McMaster Univ., Dept. of Polit. Econ., Hamilton, Ont., Canada. (1951)
GRAHAM, John F., Dalhousie Univ., Dept. of Econ., Halifax, N.S., Canada. (1949)
GRAHAM, John J., 7 Court St., West Haven 16, Conn. (1944)
GRAHAM, Robert C., Loyola Univ., Los Angeles 45, Calif. (1949)
GRAHAM, Willard J., Arrowhead Rd., Greenwood, Chapel Hill, N.C. (1947)
GRAMBSCH, Paul V., Tulane Univ., Col. of Bus. Admin., New Orleans 18, La. (1948)
GRAMPP, William D., 5701 Kenwood Ave., Chicago 37, Ill. (1944)
GRANER, Frank M., 4318 Mohawk Dr., Madison, Wis. (1946)
GRANICK, David, Fisk Univ., Dept. of Soc. Sci., Nashville 8, Tenn. (1949)
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GRANT, Stephen W., Houghton Mifflin Co., 2 Park St., Boston 7, Mass. (1953)
*GRANT, William F., 3602 Valley Dr., Alexandria, Va. (1953)
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GRAUE, Erwin, Univ. of Idaho, Moscow, Idaho. (1930)
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GRAVES, Lawrence B., Newberry Col., Newberry, S.C. (1947)
GRAY, Daniel H., 10 Strathan Rd., Lexington 73, Mass. (1952)
GRAY, Edward R., 3501 Williamsburg Lane, N.W., Washington 8, D.C. (1925)
GRAY, Horace M., Univ. of Illinois, Col. of Com., Dept. of Econ., Urbana, Ill. (1923)
GRAY, Laurence R., Univ. of Arizona, Dept. of Econ., Tucson, Ariz. (1941)
GRAY, Robert H., 24 E. Market St., Bethlehem, Pa. (1944)
GRAYSON, Henry, Univ. of Maryland, Dept. of Econ., College Park, Md. (1950)
GRAYSON, Martin, 114-75 226th St., Cambria Heights, New York, N.Y. (1951)
GREAVES, Percy L., Jr., 26 W. 58th St., New York 19, N.Y. (1951)
GREBLER, Leo, Columbia Univ., Sch. of Bus., New York 27, N.Y. (1944)
GREEF, Albert O., Univ. of Connecticut, Storrs, Conn. (1924)
GREEN, Howard W., 1001 Huron Rd., Cleveland 15, Ohio. (1946)
GREEN, James L., Michigan Col. of Min. and Tech., Dept. of Eng. Admin., Houghton, Mich. (1953)
GREEN, Paul M., 1115 W. Union St., Champaign, Ill. (1928)
GREEN, Theodore G., 1229603, H & S Co., 8th Motc Trans. Bn. Serv. Com., FMF-Tent Camp, Cam Lejeune, N.C. (1950)
GREENE, James R., American Embassy, Mexic D.F., c/o Dept. of State, Washington 25, D.C. (1951
GREENE, Joseph A., Jr., Box 326, Sta. A, Hattiesburg Miss. (1950)
GREENHOUSE, Samuel M., 618 Nicholson St., N.E Washington, D.C. (1949)
GREENHUT, Melvin L., 29 Lindberg Blvd., Starkvill Miss. (1948)
GREENING, George E., Lafayette Col., Easton, Pa (1951)
GREENOUGH, William C., Teachers Ins. and Anr Asso., 522 Fifth Ave., New York 18, N.Y. (1950)
GREENSLADE, Rush V., 4907 Bangor Dr., Kensing ton, Md. (1950)
GREENSPAN, Alan, 67-14 Juno St., Forest Hills, N.Y (1949)
GREENSPAN, Benjamin, 345 Madison Ave., Ne York, N.Y. (1944)
GREENSPAN, Harry J., 2906 Naylor Rd., S.E Washington 19, D.C. (1952)
GREENWOOD, Hans P., 5381 Coolidge Ave., Culve City, Calif. (1947)
GREGORIA, Sister Mary, Mundelein Col., Chicago Ill. (1947)
GREGORY, Dean, American Int. Col., APO 616, c/ Postmaster, New York, N.Y. (1951)
GREGORY, Paul M., Dept. of Econ., Box 626, Uni versity, Ala. (1940)
GREGORY, Peter, 543 79th St., Brooklyn 9, N.Y (1950)
GREGORY, Robert H., Univ. of Buffalo, Crosby Hall Buffalo, N.Y. (1949)
GREGORY, William L., 4915 Delmar Blvd., St. Louis 8 Mo. (1934)
GRESHAM, Harold D., 303 Haycock Rd., Fall Church, Va. (1932)
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GRETEER, Ewald T., Univ. of California, Econ. Dept. Berkeley 4, Calif. (1923)
GREY, Arthur L., Jr., Univ. of Nevada, Dept. of Econ. Reno, Nev. (1951)
GREY, Leo, 204 N. Wayne St., Arlington, Va. (1952
GRIEST, Charity J., 370 Normal Pkwy., Chicago 21 Ill. (1949)
GRIFFENHAGEN, Edwin O., 1100 Lake Shore Dr. Chicago 11, Ill. (1912)
GRIFFIN, Albert, Emory University, Ga. (1934)
GRIFFIN, Arthur G., Davidson Col., Davidson, N.C (1927)
GRIFFIN, Clare E., Univ. of Michigan, Sch. of Bus Admin., Ann Arbor, Mich. (1920)
GRIFFIN, John I., 400 E. 20th St., New York 9, N.Y (1936)
GRIFFITH, Edwin C., Washington and Lee Univ., 2 Sellers Ave., Lexington, Va. (1943)
GRIFFITH, Wallace H., BoQ 149-46, USMA, Wes Point, N.Y. (1952)
GRIGG, Vernon H., 19 Mercer St., Somerville, N.J (1952)
GRIMES, Blaine E., 51 N. Washington, Delawar Ohio. (1947)
GRIP, Robert H., 39 Bemis St., Newtonville 60, Mas (1952)
GRISWOLD, John A., Dartmouth Col., Amos Tuc Sch., Hanover, N.H. (1946)
GRODINSKY, Julius, Univ. of Pennsylvania, 315 Har Bldg., Philadelphia, Pa. (1941)
GRODSKI, Gertrude V., 820 N. Michigan Ave., Chi cago, Ill. (1948)
GROHOUSKI, John A., Jr., 748 E. 84th St., Chicag 20, Ill. (1946)
GROSE, Lawrence, 7203 Sligo Pkwy., E., Takom Park 12, Md. (1947)
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GROSS, Sheldon A., 55 Crest Dr., South Orange, N.J (1949)
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GROSSE, Robert N., Bur. of the Budget, Washington 25, D.C. (1946)
GROSSMAN, Gregory, Harvard Univ., Russian Res. Center, Cambridge 38, Mass. (1948)
GROSSMAN, Morton C., 211 Maple St., New Haven, Conn. (1947)
GROVE, David L., 8 Cedar Lane, Woodside, Calif. (1947)
GROVE, Ernest W., 4210 12th Rd. S., Apt. 1, Arlington, Va. (1940)
GROVES, Harold M., Univ. of Wisconsin, Dept. of Econ., Madison 6, Wis. (1926)
GROW, Russell, McKendree Col., Lebanon, Ill. (1948)
GRUBBS, Kenneth R., Box 762, Tech. Sta., Ruston, La. (1947)
GRUBER, Ossian, Univ. of Akron, Com. Dept., Akron 4, Ohio. (1948)
GRUCHY, Allan G., Univ. of Maryland, Dept. of Econ., College Park, Md. (1937)
***GRUEN, Berta A. (Mrs. Edward D.),** 1 S. Balch St., Hanover, N.H. (1944)
GRUEN, Edward D., 1 S. Balch St., Hanover, N.H. (1941)
GRUENBERG, (Mrs.) Gladys W., St. Louis Univ., 3674 Lindell Blvd., St. Louis 8, Mo. (1950)
GRUNBERG, Emile, Carnegie Inst. of Tech., Dept. of Econ., Pittsburgh 13, Pa. (1942)
GRUNER, Raymond W., R.R. 2, Box 142, Naperville, Ill. (1946)
GRUNFEL, Judith, 1538 Monroe St., N.W., Washington 10, D.C. (1949)
GRUNING, Charles H., 621 Ocean Ave., New London, Conn. (1927)
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GRUNWALD, Kurt, P.O.B. 764, Jerusalem, Israel. (1947)
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GRUSKY, Reuben, 3206 Wisconsin Ave., N.W., Apt. 63, Washington 16, D.C. (1951)
GRYGIEL, John A., A. T. & S. F. Ry. Co., Gen. Frgt. and Pass Office, Albuquerque, N.M. (1949)
GUAY, Fernand P., 1006 Newton St., N.E., Washington 17, D.C. (1950)
GUERIN, Joseph R., St. Joseph's Col., Philadelphia 31, Pa. (1949)
GUEST, Harold W., Baker Univ., Baldwin, Kans. (1922)
GUILD, Lawrence R., 239 S. Van Ness Ave., Los Angeles 4, Calif. (1926)
GULICK, Charles A., Univ. of California, 119 South Hall, Berkeley 4, Calif. (1923)
GULICK, Clarence S., 4702 De Russey Pkwy., Chevy Chase 15, Md. (1948)
GULYAS, Theodore S., 2784 E. 124th St., Cleveland 20, Ohio. (1949)
GUMPERZ, Julian, 610 Fifth Ave., Room 603, New York 20, N.Y. (1934)
GUNDERSON, Sherman E., Oshkosh State Col., Oshkosh, Wis. (1952)
GUNDLACH, Gustav, Pont. Universita Gregoriana, Piazza Della Pilotta 4, Rome 2/4, Italy. (1952)
GUNN, Grace T., 2216 Hall Pl., N.W., Washington 7, D.C. (1944)
GUNN, John M., Jr., 152 Grad. Col., Princeton, N.J. (1952)
GUNNARSON, Arthur B., 265 Beverly Rd., Scarsdale, N.Y. (1925)
GUNTER, John W., c/o Judson C. Jones, Bur. of German Affairs, Dept. of State, Washington, D.C. (1949)
GURLEY, John G., Princeton Univ., Econ. Dept., Princeton, N.J. (1950)
GURZYNSKI, Z. S., Univ. of Cape Town, Dept. of Com., Cape Town, S. Africa. (1952)
GUSTAFSON, George A., 2321 W. St. Joseph St., Lansing 15, Mich. (1950)
GUSTAFSON, Robert L., 1414 E. 59th St., Chicago 37, Ill. (1949)
GUTCHESS, Franklin J., 3309 Martha Custis Dr., Parkfairfax, Alexandria, Va. (1945)
GUTH, Herbert J., 1401 Tuckerman St., N.W., Washington 11, D.C. (1949)
GUTHMANN, Harry G., Northwestern Univ., Sch. of Com., Evanston, Ill. (1919)
GUTHRIE, John A., State Col. of Washington, Sch. of Bus. Admin., Pullman, Wash. (1941)
GUTIÉRREZ, Luis E., 705 Carondelet Bldg., New Orleans 12, La. (1947)
GUTIERREZ, Ricardo Munoz, 2a, Ave. Norte No. 27, San Salvador, Salvador. (1952)
GUTMANN, Franz, 3222 N. Downer Ave., Milwaukee 11, Wis. (1939)
GUYTON, Percy L., King Col., Bristol, Tenn. (1945)

HAARSCHER, Jean, 17 rue Rousselet, Paris 7, France. (1952)
HAAS, Francis J., 2006 Lake Dr., S.E., Grand Rapids, Mich. (1940)
HAAS, George C., 5510 Cedar Pkwy., Chevy Chase 15, Md. (1936)
HAASE, Herta, 3812 Florence Dr., Apt. 5, Dominion Gardens, Alexandria, Va. (1946)
HABER, William, Univ. of Michigan, Dept. of Econ., Ann Arbor, Mich. (1941)
HABERLER, Gottfried, 326 Littauer Center, Cambridge 38, Mass. (1928)
HACKER, Emanuel A., 30 W. 12th St., New York 11, N.Y. (1940)
HACKER, Louis M., Columbia Univ., New York 27, N.Y. (1934)
HACKMAN, Joseph, 430 S. Michigan Ave., Chicago 5, Ill. (1946)
HADCOCK, Editha, De Pauw Univ., Greencastle, Ind. (1948)
HADJIDOTOU, Tasso, Apartado 303, Guatemala City, Guatemala. (1946)
HADJISOTIRIOU, Sotos E., c/o E. Hadjisotiriou & Sons, Ltd., P.O. Box 19, Hamagusta, Cyprus. (1950)
HADLEY, Eleanor, 1240 27th St., N.W., Washington 7, D.C. (1949)
HADORN, Erwin T., Armour & Co., Econ. Res. Dept., Chicago 9, Ill. (1946)
***HAEMMEL, William G.,** Univ. of Houston Village, Bldg. 15, Apt. 2, Houston 4, Tex. (1952)
HAENER, Albert, 7219 W. 94th St., Los Angeles 45, Calif. (1949)
HAFERBECKER, Gordon, 2855 N. Prospect Ave., Milwaukee 11, Wis. (1948)
HAGEDORN, George G., 194-01A 64th Circle, Fresh Meadows, Flushing, N.Y. (1940)
HAGEMANN, John K., 2517 Plyers Mill Rd., Silver Spring, Md. (1950)
HAGEN, Everett E., Strand Hotel, Rangoon, Burma. (1938)
HAGIOS, J. Anton, Broad Street Asso., 744 Broad St., Newark 2, N.J. (1944)
HAHN, L. Albert, 830 Park Ave., New York, N.Y. (1943)
HAIG, Robert M., Columbia Univ., Sch. of Bus., New York 27, N.Y. (1911)
HAILSTONES, Thomas J., Xavier Univ., Econ. Dept., Cincinnati, Ohio. (1952)
HAINES, Clarence H., c/o Harvard Trust Co., Cambridge, Mass. (1944)
HAINES, George H., 16127 La Salle Blvd., Detroit 21, Mich. (1938)
HAINES, Walter W., Skyview Acres, Pomona, N.Y. (1944)
HAIR, Dwight, 109 Briland St., Apt. 303, Alexandria, Va. (1951)
HALAAS, Eugene T., 1052 Pontiac, Denver, Colo. (1935)
HALASI, Albert B., 5644 S. Maryland Ave., Chicago 37, Ill. (1947)
HALAYYA, M., Lingaraj Col., Belgaum, India. (1952)
HALD, Earl C., Univ. of Washington, Dept. of Econ., Seattle 5, Wash. (1939)
HALE, E. Everett, Univ. of Texas, Austin, Tex. (1927)
HALE, Robert L., Columbia Univ., New York 27, N.Y. (1911)
HALE, Rosemary D. (Mrs. G. E.), 91 Washington Circle, Lake Forest, Ill. (1949)
HALEY, Bernard F., 638 Salvatierra St., Stanford, Calif. (1926)
***HALIQ, Omar,** 986 Fifth Ave., New York 21, N.Y. (1952)
HALL, Archibald S., Univ. of Illinois, 429 David Kinley Hall, Urbana, Ill. (1948)

HALL, Bernard, 2456 Hilgard Ave., Apt. 606, Berkeley 9, Calif. (1949)
HALL, Challis A., Jr., 1447 Chapel St., New Haven 11, Conn. (1938)
HALL, Clyde L., Austin Col., Dept. of Econ., Sherman, Tex. (1950)
¶HALL, Franklin P., R.F.D. 7, Box 220, Norwich, Conn. (1940)
HALL, James K., Univ. of Washington, Dept. of Econ., Seattle 5, Wash. (1930)
HALL, R. Arthur, 4124 Emerald St., Apt. 6, Oakland 9, Calif. (1948)
HALL, W. Scott, 103 Irvine Rd., Lexington, Ky. (1929)
HALL, Willard S., Box 230, Centralia, Ill. (1929)
HALLER, Joseph A., Woodstock Col., Woodstock, Md. (1951)
HALLER, William, Jr., 571 Main St., Amherst, Mass. (1940)
HALLEY, Donald M., Tulane Univ., Col. of Com. and Bus. Admin., New Orleans 15, La. (1925)
HALLOWELL, Burton C., Box 158, Wesleyan Sta., Middletown, Conn. (1940)
HALLOWELL, Elmer W., 4408 Glenridge St., Kensington, Md. (1945)
HALM, George N., Tufts Col., Medford, Mass. (1937)
HALPIN, Charles A. J., Jr., 4447 N. Uber St., Philadelphia 40, Pa. (1946)
HALTERMAN, Jean C., 709 N. 3rd St., Vincennes, Ind. (1950)
HALTERMAN, John F., Univ. of California, Santa Barbara, Calif. (1946)
HALVORSON, Harlow W., 236 W. Sunset Ct., Madison 5, Wis. (1949)
HALVORSON, Lloyd C., Nat. Grange, 744 Jackson Pl., Washington 6, D.C. (1946)
HAM, William T., 5101 Chevy Chase Pkwy., N.W., Washington, D.C. (1925)
**HAMANN, Lila T. (Mrs. Walter C.), 4120 N. Tripp, Chicago 41, Ill. (1953)
HAMANN, Walter C., 4120 N. Tripp, Chicago 41, Ill. (1952)
HAMBERG, Daniel, Maryland Col. of Bus. and Pub. Admin., Econ. Dept., College Park Md. (1946)
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HAMBURGER, William, Stanford Univ., Dept. of Econ., Stanford, Calif. (1950)
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HAMILTON, David B., Jr., Univ. of New Mexico, Dept. of Econ., Albuquerque, N.M. (1946)
HAMILTON, Earl J., Univ. of Chicago, Dept. of Econ., Chicago 37, Ill. (1929)
HAMILTON, Edward P., 440 Fourth Ave., New York, N.Y. (1924)
HAMILTON, H. G., Univ. of Florida, Dept. of Agric. Econ., 309 Horticultural Bldg., Gainesville, Fla. (1951)
HAMILTON, Roger S., Northeastern Univ., Boston, Mass. (1935)
HAMILTON, Thomas R., Box 1496, College Station, Tex. (1923)
HAMMER, A. R., 66A Farragut St., China Lake, Calif. (1949)
HAMMER, Milton, 931 Washington Bldg., Washington 5, D.C. (1944)
HAMMER, Robert B., 133 W. 75th St., New York 23, N.Y. (1943)
HAMNER, Homer H., Baylor Univ., Sch. of Bus., Waco, Tex. (1949)
HAMOT, Herman B., 236 Ritner St., Philadelphia 48, Pa. (1951)
HAMOVITCH, William, Univ. of Buffalo, Crosby Hall, Buffalo, N.Y. (1947)
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HANCE, Wendell D., 1930 Sheridan Rd., Evanston, Ill. (1944)
HANCHETT, Paul E., Rollins Col., Winter Park, Fla. (1947)
HANCOCK, Glover D., 114 Lee Ave., Lexington, Va. (1908)
HANCOCK, Robert S., Univ. of Illinois, 405 David Kinley Hall, Urbana, Ill. (1950)
HANCOCK, Tom, 2415 Blackwood Rd., Little Rock, Ark. (1946)
HAND, George H., Southern Illinois Univ., Carbondale, Ill. (1934)
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'HANDSAKER, Morrison, 717 W. Lafayette St. Easton, Pa. (1938)
HANEY, Paul E., 821 15th St., N.W., Washington, D.C. (1940)
HANKS, James J., Kaiser Mfg. Corp., 1625 Eye St. N.W., Washington 6, D.C. (1947)
HANLON, Jeanette, 2 Peter Cooper Rd., Apt. 6D, New York 10, N.Y. (1949)
HANNA, Frank A., 2239 Cranford Rd., Durham, N.C. (1944)
HANNAFORD, John W., 2501 Ethel, Muncie, Ind. (1952)
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HANSEN, Andrew J., 1710 Bush St., San Francisco 9, Calif. (1948)
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HANSEN, Reed R., 2029 Elmwood, Middleton, Wis. (1950)
HANSHAW, A. A., P.O. Box 4181, Univ. Sta., Tucson, Ariz. (1949)
HANSON, Alice C. (Mrs. Homer Jones), 3067 Ordway St., N.W., Washington 8, D.C. (1925)
HANSON, Arthur W., Morgan Hall 219, Soldiers Field, Boston, Mass. (1924)
HANSON, E. J., Univ. of Alberta, Dept. of Poli. Econ., Edmonton, Alta., Canada. (1952)
HANSSON, Karl-Erik, 6 Peter Cooper Rd., Apt. 10D, New York 10, N.Y. (1950)
HANZARYK, Edwin W., West Virginia Univ., Dept. of Econ. and Bus. Admin., Morgantown, W.Va. (1949)
HAPPEL, Margaret, 267 Kennedy Ave., Pittsburgh 14, Pa. (1947)
HARBELL, John B., American Univ., Beirut, Lebanon (1949)
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HARBESON, Robert W., Univ. of Illinois, David Kinley Hall, Dept. of Econ., Urbana, Ill. (1927)
HARBISON, Frederick H., 1361 E. 56th St., Chicago 37, Ill. (1939)
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HARDESTY, Marion N., 7012 8th St., N.W., Washington 12, D.C. (1950)
HARDIE, Robert S., ECA, APO 928, c/o Postmaster San Francisco, Calif. (1949)
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HARDY, Harold E., Univ. of Massachusetts, Sch. of Bus. Admin., Amherst, Mass. (1943)
HARDY, J. Hazen, Jr., 537 Country Club Lane, Havertown, Pa. (1948)
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HARING, H. Albert, Indiana Univ., Sch. of Bus. Bloomington, Ind. (1928)
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HARMON, Richard P., 34 Otis Hill Rd., Hingham, Mass. (1953)
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HARPER, F. A., Found. for Econ. Educa., Irvington-on-Hudson, N.Y. (1945)
HARPER, Walton W., Ga. Agric. Exp. Sta., Experiment, Ga. (1952)
HARRELL, Cleon, Princess Anne, Va. (1951)
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HARRIS, Seymour E., 10 Traill St., Cambridge 38, Mass. (1926)
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HARRISON, George M., 701 Brotherhood Bldg., Cincinnati, Ohio. (1942)
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HART, Donald J., Univ. of Idaho, Sch. of Bus. Admin., Moscow, Idaho. (1942)
HART, John N., 298 Aurora St., Hudson, Ohio. (1947)
HART, Maurice I., 19 Bonnett, Larchmont, N.Y. (1939)
HART, Orson H., Noroton Ave. Ext., Noroton Heights, Conn. (1937)
HART, (Mrs.) Shirley K., P.O. Box 128, Lorton, Va. (1947)
HARTER, L. G., Jr., Box 911, Kentfield, Calif. (1950)
HARTKEMEIER, Harry P., P.O. Box 592, Columbia, Mo. (1942)
HARTLEY, Baron M., 14 Park St., Danvers, Mass. (1948)
HARTMAN, George E., Univ. of North Dakota, Dept. of Mktg., Grand Forks, N.D. (1951)
HARTOGENSIS, Alwyn M., 166 Melrose Pl., Ridgewood, N.J. (1945)
HARTUNG, Bruno J., Duquesne Univ., Econ. Dept., Pittsburgh, Pa. (1951)
HARTWELL, J. M., 854 Suffield Rd., Birmingham, Mich. (1946)
HARTWIG, Richard T., Box 479, Marquette, Mich. (1947)
HARTZELL, Bernard H., 2356 Selma Ave., Youngstown 4, Ohio. (1951)
HARVEY, James W., Univ. of British Columbia, Dept. of Econ., Vancouver, B.C., Canada. (1951)
HARVEY, Robert O., Indiana Univ., Sch. of Bus., Bloomington, Ind. (1951)
HARVILL, Richard A., Univ. of Arizona, Tucson, Ariz. (1933)
¶HARWOOD, Edward C., Amer. Inst. for Econ. Res., Great Barrington, Mass. (1950)
HASBROUCK, Henry C., 88 Douglas Rd., Glen Ridge, N.J. (1911)
HASEK, Carl W., 502 E. Foster Ave., State College, Pa. (1922)
HASKELL, Mark A., 32 Treacy Ave., Newark 8, N.J. (1950)
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HASSE, Adelaide R., 806 Islington St., Silver Spring, Md. (1914)
HASSELL, Edward W., 1008 N. Potomac St., Arlington, Va. (1951)
HASTINGS, Hudson B., 135 Millbrook Rd., Hamden 14, Conn. (1920)
HASTINGS, (Mrs.) Mary H., 104 Fairbanks Ave., Wellesley Hills 82, Mass. (1947)
HASTINGS, Paul G., Texas Christian Univ., Sch. of Bus., Fort Worth, Tex. (1948)
HATCH, George, Intermountain Network, Inc., 146 S. Main St., Salt Lake City, Utah. (1952)
HATCHER, Robert L., 220 Ridge Rd., Douglaston, N.Y. (1948)
¶HATHAWAY, Frank R., 142 Green St., Hudson, N.Y. (1888)
HATTON, Charles S., 2120 California St., San Francisco 15, Calif. (1952)
HAUBER, Joseph A., 4325 Kelnepa Dr., Jacksonville 7, Fla. (1948)
HAUGE, Gabriel S., 3500 Lowell St., N.W., Washington 16, D.C. (1951)
HAUHART, William F., 9463 Brenda Ave., St. Louis 23, Mo. (1920)
HAUN, George C., 6410 Regent St., Oakland 9, Calif. (1944)
HAUPTMANN, Jerzy, Park Col., Dept. of Polit. Sci., Parkville, Mo. (1950)
***HAUSWALD, Edward L.,** Indiana Univ., Dept. of Econ., Bloomington, Ind. (1951)
HAVENS, R. Murray, P.O. Box 1609, University, Ala. (1938)
HAVER, Cecil B., North Dakota Agric. Col., Dept. of Agric. Econ., State Col. Sta., Fargo, N.D. (1947)
HAVERKAMP, Leonard J., Wilson and Co., 41st and S. Ashland Ave., Chicago 9, Ill. (1946)
HAWK, Emory Q., Birmingham-Southern Col., Birmingham, Ala. (1941)
HAWK, Hugh K., Chestnutwood, State Rd., and Station Ave., Andalusia, Pa. (1952)
HAWKES, George R., 2023 B Stewart St., Santa Monica, Calif. (1946)
HAWKINS, Everett D., 8400 Old Georgetown Rd., Bethesda 14, Md. (1930)
HAWKINSON, James R., Northwestern Univ., Sch. of Com., Evanston, Ill. (1927)
HAWLEY, Langston T., Box 1384, University, Ala. (1945)
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HAWORTH, Clifford L., 302 Kenilworth, Duluth, Minn. (1929)
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HAY, D. Harvie, 81 Phillips St., Apt. 4, Boston 14, Mass. (1951)
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HAYDEN, Byron R., 1424 Community Ave., Alexandria, Va. (1942)
HAYEK, F. A., Univ. of Chicago, Com. on Soc. Thought 1126 E. 59th St., Chicago 37, Ill. (1948)
HAYES, Frederick O., 3305 Martha Custis Dr., Alexandria, Va. (1950)
HAYES, H. Gordon, Tulane Univ., New Orleans 18, La. (1915)
HAYES, James L., St. Bonaventure Col., St. Bonaventure, N.Y. (1941)
HAYES, Marion, 1712 16th St., N.W., Washington 9, D.C. (1939)
HAYES, Samuel P., Jr., 5524 Charlcote Rd., Bethesda, 14, Md. (1938)
HAYES, William A., 6646 Stony Island Ave., Chicago 37, Ill. (1950)
HAYMAN, Henry H., Hq. 11th Engr. C Gp., APO 46, c/o Postmaster, New York, N.Y. (1947)
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HAYN, Rolf, State Col. of Washington, Sch. of Econ. and Bus., Pullman, Wash. (1952)
HAYNES, Lawrence W., 9713 Montauk Ave., Bethesda, Md. (1942)
HAYNES, William W., Univ. of Kentucky, Col. of Com., Lexington, Ky. (1948)
HAYNES, Williams, Stonecrop Farm, Stonington, Conn. (1924)
HAZARD, Dorothy C. (Mrs. C. S.), 59 E. 74th St., New York 21, N.Y. (1947)
HAZLITT, Henry, 37 Washington Sq. W., New York, N.Y. (1946)
HEADY, Earl O., Iowa State Col., Dept. of Econ. and Soc., Ames, Iowa. (1949)
HEALY, James J., 18 Exeter St., Boston, Mass. (1938)
HEALY, Kent T., R.F.D. 2, Chestnut Hill Rd., Madison, Conn. (1932)
HEANY, Donald F., 9904 Dickens Ave., North Bethesda Grove, Bethesda, Md. (1943)
HEATH, Milton S., Univ. of North Carolina, Dept. of Econ. and Com., Chapel Hill, N.C. (1940)
HEATH, Ralph C., Hq. AAFNE, APO 85, c/o Postmaster, New York, N.Y. (1948)
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HEATHERINGTON, Donald F., 12 Burlington Pl., Fair Lawn, N.J. (1938)
HEATON, Earl, 1519 E. Decatur St., Decatur, Ill. (1947)
HECK, C. R., 9 Lenox Pl., Scarsdale, N.Y. (1948)

HECK, Harold J., Tulane Univ., Col. of Com. and Bus. Admin., New Orleans 18, La. (1952)
HECK, Victor C., 2201 Old Holton Rd., Macon, Ga. (1938)
HECKMAN, Harry W., 3837 Grand Ave., Western Springs, Ill. (1951)
HECKSCHER, Kay, Rahbeks allé 2C, Copenhagen, Denmark. (1952)
HEDGES, Harold C., 6532 Maple Ave., Chevy Chase 15, Md. (1952)
HEDGES, J. Edward, Indiana Univ., Sch. of Bus., Bloomington, Ind. (1932)
HEER, Clarence, Univ. of North Carolina, Chapel Hill, N.C. (1934)
HEFLEBOWER, Richard B., 418 Central Ave., Wilmette, Ill. (1934)
HEIBY, Ernest P., Apt. 307, C Bldg., 800 S. Washington St., Alexandria, Va. (1941)
HEIDINGSFIELD, Myron S., Temple Univ., Mktg. Dept., Philadelphia 22, Pa. (1952)
HEILBRUN, James, 511 E. 20th St., New York, N.Y. (1946)
HEILPERIN, Michael A., 630 Fifth Ave., Room 1260, New York 20, N.Y. (1934)
HEIM, Peggy, San Francisco State Col., Dept. of Econ., San Francisco, Calif. (1945)
HEIMANN, Edward, Grad. Faculty of Polit. and Soc. Sci., 66 W. 12th St., New York 11, N.Y. (1950)
¶HEIMBACH, Ernest E., 55 W. 11th St., New York 11, N.Y. (1951)
HEIMER, Roger C., 6050 Overbrook Ave., Philadelphia 31, Pa. (1949)
HEIN, John, 33 Liberty St., Room 921, New York 45, N.Y. (1952)
HEINE, Irwin M., 2480 16th St., N.W., Washington, D.C. (1946)
HEINEMANN, Hans, Kidder, Peabody & Co., 17 Wall St., New York, N.Y. (1941)
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HELBING, Albert T., Montana State Univ., Sch. of Bus. Admin., Missoula, Mont. (1930)
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HELFANT, Henry, Casilla 9582, Santiago, Chile. (1951)
HELFGOTT, Roy B., Jt. Bd. of Cloak, Suit, Skirt and Reefer Makers' Unions, I.L.G.W.U., 22 W. 38th St., New York 18, N.Y. (1953)
HELFINSTINE, Rex D., South Dakota State Col., Agric. Econ. Dept., Brookings, S.D. (1948)
HELIKER, George B., 23234 Floral, Farmington, Mich. (1949)
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HELLEBRANDT, Edwin T., Ohio Univ., Col. of Com., Athens, Ohio. (1947)
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HELLER, Walter W., Univ. of Minnesota, Sch. of Bus. Admin., Minneapolis 14, Minn. (1941)
HELLMUTH, William F., Jr., Oberlin Col., Dept. of Econ., Oberlin, Ohio. (1946)
HELM, Florence, 1725 New Hampshire Ave., N.W., Washington 9, D.C. (1930)
HELMBERGER, John D., 6914 Park Ave., Minneapolis 23, Minn. (1950)
HELMING, James, John Wiley & Sons, 440 Fourth Ave., New York 16, N.Y. (1948)
HELMREICH, Theodore C., Purdue Univ., Econ. Dept., West Lafayette, Ind. (1946)
HELMS, Lloyd A., Bowling Green State Univ., Bowling Green, Ohio. (1927)
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HEMOND, Robert L., 59 Fairfield Ave., Holyoke, Mass. (1950)
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HENCH, William M., 412 W. Fairmont Ave., State College, Pa. (1947)
HENDERSON, Alexander, Carnegie Inst. of Tech., Dept. of Econ., Schenley Park, Pittsburgh 13, Pa. (1952)
HENDERSON, James M., 12 Sumner Rd., Cambridg 38, Mass. (1950)
HENDERSON, Leon, 2119 Bancroft Pl., Washingtor D.C. (1935)
HENDERSON, Lucien G., Ronald Press Co., 15 E 26th St., New York 10, N.Y. (1919)
HENDERSON, Vivian W., Fisk Univ., Nashvill Tenn. (1952)
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HENDLER, (Mrs.) Diana E., 126 Winter St., Troy N.Y. (1951)
HENDRICKS, H. G., 216 Hickory St., San Antoni Tex. (1946)
HENDRICKS, Walter P., 180 Maujer St., Brooklyn N.Y. (1947)
HENDRICKSON, Harry G., Michigan State Col Basic Col., Soc. Sci. Dept., East Lansing, Mich (1947)
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HENDRIKSEN, Eldon S., 2916 Eccleston Ave., Walnu Creek, Calif. (1949)
HENDRIX, William E., Univ. of Chicago, Dept. c Econ., Chicago 37, Ill. (1948)
HENEGHAN, John M., 3323 W. Washington Blvd Chicago 24, Ill. (1952)
HENEMAN, Herbert G., 1733 Blair St., St. Paul Minn. (1941)
HENLE, Peter, 4224 23rd St., N., Arlington, Va (1946)
HENN, Margot E., 472 E. 146th St., New York 5 N.Y. (1946)
HENNIG, Harold, 338 Beacon St., Boston, Mas (1953)
HENNING, Charles N., Univ. of Washington, Col. c Bus. Admin., Seattle 5, Wash. (1952)
HENRY, Frank F., Northwestern Univ., Sch. of Com Evanston, Ill. (1948)
HENRY, John M., Coe Col., Cedar Rapids, Iow (1923)
HERBERT, Carl P., St. Paul Bur. of Munic. Res Athletic Club Bldg., St. Paul, Minn. (1943)
HERBST, Alma, Ohio State Univ., Columbus 10, Ohi (1924)
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HERFINDAHL, Orris C., R. 3, Box 442, Fairfax, Va (1947)
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*HERMAN, Charles L., 2711 Grant St., Houston Tex. (1953)
HERMAN, Howard W., 2701 Grand Concourse, Ne York 68, N.Y. (1952)
HERMAN, Leon M., 23 Underwood St., N.W., Wash ington 12, D.C. (1950)
HERMAN, Robert S., 204 Kenwood Ave., Delma N.Y. (1950)
*HERMAN, Sidney, 81 Waverly St., Roxbury 1 Mass. (1951)
HERMENS, Ferdinand A., 1721 Stocker Pl., Sout Bend, Ind. (1938)
*HERNDON, Lewis L., 705 W. Elm, Urbana, I (1952)
HERNRIED, Rudolph F. C., 154 21st Ave., San Fra cisco 21, Calif. (1947)
*HERR, William M., 109 De Witt Pl., Ithaca, N. (1951)
HERRMANN, Helen, R.D. 2, Freehold, N.J. (1928)
HERRMANN, Roy, 66 E. 93rd St., New York 28, N. (1948)
HERROLD, Lloyd D., 2210 Hartzell St., Evanston, I (1938)
HERSCHMAN, Oscar, 1125 Sterling Pl., Brooklyn 1 N.Y. (1949)
HERSEY, Arthur B., 3543 N. Delaware St., Arlington Va. (1943)
HERSEY, M. Leonard, Socony Vacuum Oil Co., 2 Broadway, New York 4, N.Y. (1939)
HERSON, Richard J. L., 33 W. 42nd St., New York 1 N.Y. (1944)
HERZ, Henry, 57 Ardsley Rd., Montclair, N.J. (194
HERZEL, William G., Ky. Dept. of Rev., Frankfor Ky. (1944)
HESS, Arleigh P., Jr., 243 Mountwell Ave., Haddo field, N.J. (1948)

HESSION, Charles H., 1184 E. 31st St., Brooklyn 10, N.Y. (1947)
HETZEL, Alice M., 1716 Lanier Pl., N.W., Washington 9, D.C. (1947)
HEUSER, Henry K., Fed. Res. Bd., Div. of Int. Fin., Washington, D.C. (1942)
HEUSNER, W. W., Pabst Sales Co., 221 N. LaSalle St., Chicago 1, Ill. (1945)
HEUSON, William G., 628 Santander, Coral Gables, Fla. (1948)
HEUSTON, Milton C., 129 S. Monterey St., Alhambra, Calif. (1946)
HEWES, Amy, Mount Holyoke Col., South Hadley, Mass. (1906)
HEWES, Laurence I., Jr., 2427 S. Dahlia Lane, Denver 7, Colo. (1950)
HEWETT, William W., Univ. of Cincinnati, Dept. of Econ., Cincinnati, Ohio. (1921)
HEXNER, Ervin, 2732 Woodley Pl., N.W., Washington 8, D.C. (1940)
HEYDINGER, Norman F., Libbey-Owens-Ford Glass Co., Nicholas Bldg., Toledo 3, Ohio. (1953)
HEYMANN, Hans, Jr., 2723 Butler Ave., Los Angeles 64, Calif. (1948)
HEYWARD, Eric J. R., 101 Station Rd., Great Neck, L.I., N.Y. (1948)
HIATT, Amos, 15 Edgemont Ave., Summit, N.J. (1940)
HIBBARD, Benjamin H., Col. of Agric., Madison, Wis. (1908)
HICKMAN, Bert G., Northwestern Univ., Dept. of Econ., Evanston, Ill. (1949)
HICKMAN, C. Addison, Univ. of Illinois, 225 David Kinley Hall, Urbana, Ill. (1946)
HICKMAN, Frank H., Northwestern State Col., Alva, Okla. (1950)
HICKMAN, W. Braddock, 328 W. 86th St., New York 24, N.Y. (1940)
HICKMAN, William E., 2916 24th St., Sacramento, Calif. (1950)
HICKS, Clifford M., Univ. of Nebraska, Lincoln, Neb. (1934)
‡HICKS, J. R., Nuffield Col., Oxford, England. (1950)
HICKS, John W., 924 Elm Dr., West Lafayette, Ind. (1952)
HIDY, Muriel E. (Mrs. R. W.), 55 Summer St., Forest Hills 75, N.Y. (1932)
**HIDY, Ralph W., 55 Summer St., Forest Hills 75, N.Y. (1951)
HIESTAND, Dale L., 42 W. 108th St., Orangeburg, N.Y. (1949)
HIGDON, Earl T., 315 N. Silver, Lamoni, Iowa. (1941)
HIGGINS, Benjamin H., McGill Univ., Purvis Hall, 1020 Pine Ave. W., Montreal, Que., Canada. (1946)
¶HIJIKATA, S., 6, Sanbancho, Chiyodaku, Tokyo, Japan. (1921)
HILDEBRAND, George H., Univ. of California, Dept. of Econ., Los Angeles 24, Calif. (1939)
HILDEBRAND, John R., 1116 E. 61st St., Chicago 37, Ill. (1949)
HILDEGARDE, Sister M., Dunbarton Col. of the Holy Cross, Washington 8, D.C. (1953)
HILDES, Emanuel, 21 Academy Lane, Levittown, L.I., N.Y. (1949)
HILDRETH, Clifford G., Cowles Comm., Univ. of Chicago, Chicago 37, Ill. (1944)
HILDRETH, Roland J., 691 Pammel Ct., Ames, Iowa. (1950)
HILGERDT, Folke, 7 Wooleys Lane, Great Neck, N.Y. (1943)
HILKEN, Henry G., 401 Elm St., Chevy Chase 15, Md. (1941)
HILL, Daniel A., 1633 Compton Rd., Cleveland Heights, Ohio. (1931)
HILL, Forest G., Univ. of California, Dept. of Econ., Berkeley 4, Calif. (1945)
HILL, George B., 14227 Magnolia Blvd., Van Nuys, Calif. (1923)
HILL, James C., 1009 Edgewood Ave., Pelham Manor, N.Y. (1940)
HILL, Robert A., P.O. Box 454, Humboldt Co., Samoa, Calif. (1951)
HILL, Robert J., 50 Congress St., Boston 9, Mass. (1947)
HILL, Samuel S., Jr., 3051 Idaho Ave., N.W., Washington, D.C. (1943)
HILL, Wendell C., 4514 Connecticut Ave., N.W., Washington 8, D.C. (1948)
HILL, Willie W., Univ. of North Dakota, Sch. of Com., Econ. Dept., Grand Forks, N.D. (1952)
HILLABOLD, Arthur B., Jr., CEA, Bd. of Trade Bldg., Room 1200, 141 W. Jackson Blvd., Chicago, Ill. (1952)
HILLHOUSE, Albert M., Cornell Univ., Sch. of Bus. and Pub. Admin., Ithaca, N.Y. (1941)
HILLMAN, Jimmye S., Univ. of Arizona, Agric. Econ. Dept., Tucson, Ariz. (1950)
HILLMAN, Murray, 111-23 76th Rd., Forrest Hills, N.Y. (1946)
¶HILTON, George W., 5555 Everett Ave., Chicago 37, Ill. (1948)
HILTON, Howard, Jr., 6007 Milo Dr., Washington 16, D.C. (1942)
**HILTON, Mary N. (Mrs. Howard J., Jr.), 6007 Milo Dr., Washington 16, D.C. (1950)
HIMADEH, Sa'id Behmed, American Univ., Beirut, Lebanon. (1928)
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HINDEN, H. Norman, 1 E. 44th St., New York 17, N.Y. (1951)
HINES, Howard H., Iowa State Col., Dept. of Econ. and Soc., Ames, Iowa. (1947)
HINES, L. Gregory, Dartmouth Col., Dept. of Econ., Hanover, N.H. (1950)
HINMAN, Albert G., The Principia, St. Louis, Mo. (1934)
HINRICHS, Albert F., 3214 Newark St., N.W., Washington 6, D.C. (1935)
HINSHAW, Randall W., Div. of Fin. and Tr., Eur. Office, MSA, 2 rue St. Florentin, Paris 1, France. (1940)
HINTON, Billy J., Baylor Univ., Sch. of Bus., Waco, Tex. (1950)
*HIPPERT, Charles H., Main St., Williamsburg, Ohio. (1952)
HIRSCH, Abraham, Col. of William and Mary, Williamsburg, Va. (1948)
HIRSCH, Donald B., 4626 Knox Rd., College Park, Md. (1948)
**HIRSCH, Edith (Mrs. Julius), 545 West End Ave., Apt. 161, New York, N.Y. (1944)
HIRSCH, Julius, 545 West End Ave., Apt. 161, New York, N.Y. (1944)
¶HIRSCH, Werner Z., Washington Univ., Dept. of Econ., St. Louis, Mo. (1949)
*HIRSCHBERG, Paul S., Michigan State Col., Dept. of Econ., East Lansing, Mich. (1953)
HIRSCHMAN, Albert O., c/o Sinisterra, Banco de la Republica, Bogotá, Colombia. (1946)
HIRSEMAN, Paul W., Kynlyn Apts., 1305 Riverside Dr., Bellevue, Wilmington, Del. (1947)
HIRSHLEIFER, Jack, RAND Corp., 1500 Fourth St., Santa Monica, Calif. (1951)
HITCH, Charles J., 15,410 Albright St., Pacific Palisades, Calif. (1945)
HITCH, Thomas K., 1139 Kapiolani Blvd., Honolulu 14, Hawaii. (1942)
HITCHINGS, George P., Ford Motor Co., 3000 Schaefer Rd., Dearborn, Mich. (1948)
HJELMSTAD, J. H., 416 S. Seventh St., Moorhead, Minn. (1934)
HO, Franklin L., 220 Everit St., New Haven 11, Conn. (1949)
HOADLEY, Walter E., Jr., Armstrong Cork Co., Lancaster, Pa. (1942)
HOAG, C. G., 619 Walnut Lane, Haverford, Pa. (1943)
HOAG, Clyde R., 517 Lincoln, Ripon, Wis. (1952)
HOAG, Howard L., 805 Hayes St., West Lafayette, Ind. (1947)
HOAG, Pierre, Eastman Kodak Co., Kodak Park, Rochester, N.Y. (1940)
HOAGLAND, Henry E., 2448 Southway Dr., Columbus, Ohio. (1910)
HOBART, George H., 603 W. Farris Ave., High Point, N.C. (1943)
HOBBAH, Reginald V., Air Transport Asso. of Amer., 1107 16th St., N.W., Washington, D.C. (1946)
HOBBS, Ranald P., Rinehart & Co., 232 Madison Ave., New York 16, N.Y. (1946)
HOBSON, Asher, Univ. of Wisconsin, Col. of Agric., Madison 3, Wis. (1920)
HOCH, Irving J., 4642 N. Drake Ave., Chicago 25, Ill. (1951)

HOCH, Myron L., 145 Henry St., Brooklyn 2, N.Y. (1944)
HOCHWALD, Werner, Washington Univ., Dept. of Econ., St. Louis 5, Mo. (1942)
HOCTOR, Thomas F., Dept. of State Mail Room, Washington 25, D.C. (1953)
HODGES, Henry G., Univ. of Florida, Gainesville, Fla. (1947)
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HODGES, John E., Rice Inst., Econ. Dept., Houston, Tex. (1946)
HODGES, John R., Univ. of Kansas City, Kansas City 4, Mo. (1933)
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HODGMAN, Donald R., Univ. of California, Dept. of Econ., Berkeley 4, Calif. (1949)
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HOEGSTEDT, Ridgeway, Rutgers Univ., Dept. of Econ., New Brunswick, N.J. (1950)
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HOFFMAN, G. Wright, Univ. of Pennsylvania, Dept. of Ins., Philadelphia, Pa. (1920)
HOFFMAN, H. Theodore, 16729 Fenmore, Detroit 35, Mich. (1951)
HOFFMAN, Marvin, 9602 Columbia Ave., Cleveland 8, Ohio. (1951)
HOFFMAN, Michael L., New York Times, Times Sq., New York, N.Y. (1950)
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HOGAN, John D., Jr., Syracuse Univ., Col. of Lib. Arts, Syracuse 10, N.Y. (1952)
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HOGAN, William R., Tulane Univ., Dept. of Hist., New Orleans, La. (1952)
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HOLBIK, Karel, Idaho State Col., Dept. of Econ., Pocatello, Idaho. (1950)

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HOLDER, Brantson B., Box 868, Lexington, Va. (19
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HOLDREN, Bob R., Bates Col., Dept. of Ec Lewiston, Me. (1947)
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HOLLADAY, James, Univ. of Alabama, Sch. of Cc University, Ala. (1929)
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HOLLAND, Daniel M., 118-11 84th Ave., Apt. Kew Gardens, L.I., N.Y. (1947)
***HOLLAND, John E.,** 10 Elm St., Montpelier, (1952)
HOLLAND, Robert C., 3129 Western Ave., Park For Chicago Heights, Ill. (1949)
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HOLLANDER, (Mrs.) Leona R., 9310 68th A Forest Hills, N.Y. (1942)
HOLLANDER, Stanley C., Univ. of Pennsylva Mktg. Dept., Philadelphia 4, Pa. (1947)
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HOLLEY, Julian L., 2700 Que St., N.W., Washing 7, D.C. (1940)
HOLLOWAY, Charles S., 2526 11th St., N.W., W ington 1, D.C. (1948)
HOLLOWAY, Robert J., Univ. of Minnesota, Sch Bus. Admin., Minneapolis 14, Minn. (1950)
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HOLLY, J. Fred, Univ. of Tennessee, Sch. of Admin., Knoxville, Tenn. (1948)
HOLM, Donald S., Jr., 906 Again St., Columbia, (1949)
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HOLMES, Floyd C., 5909 Onondaga Rd., Washing 16, D.C. (1934)
HOLSEN, John A., 114 Wolfe St., Alexandria, (1950)
HOLT, Charles C., Harlem and Tesla Sts., Pittsbu 7, Pa. (1947)
HOLTHAUSEN, Duncan M., 82 Norman Pl., Ten N.J. (1939)
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HON, Ralph C., Southwestern, Memphis 12, T (1928)
HONG, Everette N., Iowa State Col., Dept. of Econ., Ames, Iowa. (1940)
HONNOLD, Junia H., Apt. 4, Buckingham, 22 Piedmont St., Arlington, Va. (1930)
HOOD, William C., Univ. of Toronto, Dept. of E 273 Bloor St. W., Toronto, Ont., Canada. (1947)
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HOOLEY, Richard, Univ. of Vermont, Dept. of C and Econ., Burlington, Vt. (1952)
HOOS, Sidney, Univ. of California, Giannini Fo Berkeley, Calif. (1939)
HOOVER, Calvin B., Duke Univ., Econ. Dept., ham, N.C. (1925)
HOOVER, Edgar M., 5705 Chevy Chase Pkwy., W ington, D.C. (1933)
HOOVER, Glenn E., Mills Col., Dept. of Econ., College P.O., Calif. (1925)
HOPE, John, II, Fisk Univ., Soc. Sci. Inst., Nas 8, Tenn. (1938)
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ORNE, Roman L., 25 Marion Ave., McLean, Va. (1935)
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ORTON, Byrne J., 56 Seventh Ave., New York 11, N.Y. (1946)
ORTON, Donald C., U. S. Dept. of Agric., Bur. of Agric. Econ., Div. of Agric. Fin., Washington, D.C. (1926)
ORWICH, George, Indiana Univ., Dept. of Econ., Bloomington, Ind. (1948)
OSELITZ, Bert F., Univ. of Chicago, Div. of Soc. Sci., Chicago 37, Ill. (1944)
OSTETLER, L. Merle, Fed. Res. Bank, Cleveland 1, Ohio. (1947)
OTCHKISS, Willard E., 431 Alma Real, Pacific Palisades, Calif. (1902)
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OUGH, Louis, Univ. of Pittsburgh, Dept. of Statis., Pittsburgh, Pa. (1949)
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OUSTON, Neil T., Stanford Res. Inst., Dept. of Econ. and Res., Stanford, Calif. (1948)
OUWINK, Willem, 214 Riverside Dr., Apt. 6N, New York, N.Y. (1951)
OVDA, Howard B., 1115 Ellen Ave., Falls Church, Va. (1949)
OVDE, Howard T., Beachwood, N.J. (1934)
OVER, Charles S., 121 Marion St., Denver, Colo. (1952)
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OWARD, Charles H., 76 Rutgers St., Rochester 7, N.Y. (1923)
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OWARD, Gordon E., 1316 Popkins Lane, Alexandria, Va. (1945)
OWARD, Jack A., Univ. of Chicago, Sch. of Bus., Haskell Hall, Chicago 37, Ill. (1944)
OWARD, Sister Jane Mary, Marygrove Col. Lib., Detroit 21, Mich. (1945)
OWARD, John B., U. S. Tariff Comm., Washington 25, D.C. (1945)
OWARD, Marshall C., Univ. of Massachusetts, Dept. of Econ., Amherst, Mass. (1949)
OWARD, Martha C., c/o Fund for Adult Educa., Ford Found., 914 E. Green St., Pasadena 1, Calif. (1946)
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HOWELL, Philip L., Univ. of Tulsa, Bus. Admin., Tulsa 4, Okla. (1936)
HOWENSTINE, E. Jay, Jr., Int. Labour Office, Geneva, Switzerland. (1944)
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HUANG, K. Loo, c/o G. Woon, 1 Rue Henri Spiess, 1, Geneva, Switzerland. (1952)
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HURST, D'Orsey, Time, Inc., 9 Rockefeller Plaza, New York, N.Y. (1949)
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HUTCHINS, John G. B., Cornell Univ., Sch. of Bus. and Pub. Admin., Ithaca, N.Y. (1935)
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IRWIN, Harold S., Arlington Village, Apt. 504, Arlington, Va. (1928)
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ISBISTER, Claude M., 19 Madawaska Dr., Ottawa, Ont., Canada. (1946)
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ISRAELSEN, Vernon L., 880 N. 2nd E., Logan, Ut (1943)
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JACK, Lawrence B., B.C. Elec. Ry. Co., Hastings a Carrall Sts., Vancouver, B.C., Canada. (1945)
JACKENDOFF, Nathaniel, Temple Univ., Dept. Econ., Broad and Montgomery, Philadelphia, (1947)
JACKSON, Charles D., 407 Rosemary St., Che Chase, Md. (1923)
JACKSON, Elmo L., Univ. of Florida, Dept. of Ec Gainesville, Fla. (1949)
JACKSON, Frederic A., Morgan State Col., Baltim 12, Md. (1944)
JACKSON, J. Hugh, Stanford Univ., Grad. Sch. Bus., Stanford, Calif. (1917)
JACKSON, James R., Box 147, Sta. A, Fairborn, O (1927)
JACKSON, Kathleen C., Hollins College, Va. (1927)
JACOBS, Arthur T., 9 Stafford Pl., Larchmont, N (1938)
JACOBS, Clifford D., Box 246, Col. Sta., Pullm Wash. (1930)
JACOBS, David L. G., 1411 Washington St., Evanst Ill. (1950)
JACOBS, Donald P., 315 E. 6th St., New York, N (1949)
JACOBS, George R., 3510 Gunston Rd., Alexand Va. (1942)
JACOBSEN, Arthur D., 3236 F St., San Bernardi Calif. (1945)
JACOBSON, Solomon, 3626 Kings Hwy., Brookl N.Y. (1952)
JACOBSTEIN, Meyer, 2651 16th St., N.W., Washi ton 9, D.C. (1944)
JACOBY, Neil H., 1430 Midvale Ave., Los Angeles Calif. (1933)
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JAFFE, William, Northwestern Univ., Dept. of Ec Evanston, Ill. (1925)
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JAMES, Lee M., Michigan State Col., Dept. Forestry, East Lansing, Mich. (1945)
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JAMISON, Charles L., Univ. of Michigan, Sch. Bus. Admin., Ann Arbor, Mich. (1923)
JANCAUSKAS, R., Univ. of Detroit, McNichols Rd Livernois, Detroit 1, Mich. (1947)
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JANSSEN, Melvin R., Purdue Univ., 116 A.E.S. Ann Lafayette, Ind. (1952)
JARACZ, William A., 1197 Radnor Pl., Falls Chu Va. (1949)
JARRETT, James M., Bur. of Int. Rev., Ex Profits Tax Coun., Washington, D.C. (1928)
JASNY, N., Soviet Econ. Study Group, 2807 Erie S.E., Washington 20, D.C. (1950)
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AYNES, Edgar N., Fairmont State Col., Fairmont, W.Va. (1949)
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ENKINS, John W., 8 Peter Cooper Rd., New York 10, N.Y. (1952)
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ENNINGS, W. W., 1336 Fontaine Rd., Lexington, Ky. (1923)
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ENSEN, Finn B., Lehigh Univ., Col. of Bus. Admin., Bethlehem, Pa. (1943)
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EUCK, John E., Univ. of Chicago, Sch. of Bus. Chicago, Ill. (1943)
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OELSON, Walter K., 41–55 Case St., Elmhurst, L.I., N.Y. (1950)
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OHNS, Vernon O., Box 659, Blacksburg, Va. (1946)
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JOYCE, W. Seavey, Boston Col., Col. of Bus. Admin., Chestnut Hill 67, Mass. (1949)
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KRAESSEL, Alfredo, Univ. of Bridgeport, Dept. of Econ., Bridgeport, Conn. (1950)
KRAMER, Leon, 19 W. 8th St., New York, N.Y. (1941)
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KRESS, Andrew J., 4234 47th St., N.W., Washington, D.C. (1944)
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LACHMANN, Karl E., United Nations, Econ. Affairs Dept., Fiscal Div., Lake Success, N.Y. (1938)
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LAFFER, Kingsley, Univ. of Sydney, Econ. Dept., Sydney, N.S.W., Australia. (1952)
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LAIDLER, Harry W., 292 Garfield Pl., Brooklyn, N.Y. (1924)
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LANDEY, Robert J., 143 E. 39th St., New York, N.Y. (1942)
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LANTOS, Thomas P., 746 Cherry Ave., San Calif. (1953)
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LARY, Hal B., U.N. Econ. Com. for Europe, Pal Nations, Geneva, Switzerland. (1946)
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LATTA, Maurice C., Univ. of Nebraska, Dept. of Lincoln 8, Neb. (1946)
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LAURENTI, Luigi M., 1810 Rose St., Berke Calif. (1950)
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LAY, Chester F., Southern Methodist Univ., D Tex. (1947)
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LEARNED, Edmund P., Harvard Univ., Grad. Bus., Soldiers Field, Boston, Mass. (1923)

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LEAVITT, Charles T., Iowa State Teachers Col., Dept. of Soc. Sci., Cedar Falls, Iowa. (1948)
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LEBEDA, Agnes, Iowa State Teachers Col., Dept. of Bus. Educa., Cedar Falls, Iowa. (1952)
LEBERGOTT, Stanley, Bur. of the Budget, 421 Exec. Office Bldg., 17th and Pennsylvania Ave., Washington 25, D.C. (1942)
LEBOVITZ, Herman A., McKenzie Sch., Chattanooga, Tenn. (1949)
LECHT, Leonard A., Univ. of Texas, Econ. Dept., Austin 12, Tex. (1947)
*LECHTMAN, Barbara L., 545 W. 111th St., New York 25, N.Y. (1952)
Le CLAIR, Edward E., Jr., Middlebury Col., Dept. of Econ., Middlebury, Vt. (1950)
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LEDERLE, John W., Univ. of Michigan, Gen. Lib., Ann Arbor, Mich. (1950)
LEE, Harry H., 4820 Nebraska Ave., N.W., Washington, D.C. (1935)
*LEE, Homer S., 548 W. 113th St., New York 25, N.Y. (1952)
LEE, Ivan M., Univ. of California, Giannini Found., Berkeley 4, Calif. (1948)
LEE, Judson F., Ottawa Univ., Ottawa, Kans. (1942)
LEE, Luke, Clarkson Col., Potsdam, N.Y. (1952)
LEE, Maurice W., Washington State Col., Sch. of Econ. and Bus., Pullman, Wash. (1939)
LEE, Ralph M., Mars Hill Col., Mars Hill, N.C. (1945)
LEEMAN, Wayne A., Univ. of Missouri, B. and P. A. Bldg., Columbia, Mo. (1948)
LEESE, Charles, 514 Lowes St., Dayton 9, Ohio. (1927)
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LEFFLER, George L., Pennsylvania State Col., State College, Pa. (1949)
LEFKER, Harry, 165 Broadway, New York 6, N.Y. (1942)
LEFTWICH, Richard H., Oklahoma A. and M. Col., Sch. of Com., Stillwater, Okla. (1947)
LEGAN, William E., 1010 Pine St., St. Louis 1, Mo. (1940)
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LEHMAN, Leland C., Denison Univ., Dept. of Econ., Granville, Ohio. (1946)
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LEIB, Karl E., Univ. of Iowa, Dept. of Labor and Mgt., Iowa City, Iowa. (1951)
LEIBACHER, Charles E., 316 Hawthorne St., Glen Ellyn, Ill. (1947)
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LEIGH, Arthur H., Reed Col., Div. of Hist. and Soc. Sci., Portland 2, Ore. (1945)
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LEIGHTON, Leocade, 1728 N. Rhodes St., No. 277, Arlington, Va. (1943)
LEISERSON, William M., 3210 34th St., N.W., Washington 8, D.C. (1915)
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LEKACHMAN, Robert, Barnard Col., New York 27, N.Y. (1947)
LELAND, Simeon E., Northwestern Univ., Col. of Lib. Arts, Evanston, Ill. (1921)
LELAND, Thomas W., A. and M. Col. of Texas, College Station, Tex. (1931)
LEMAY, Donald, 427 W. 51st St., New York 19, N.Y. (1951)
LEMELIN, Charles, 27 ave. Chouinard, Quebec, Que., Canada. (1951)
LEMKE, B. C., Michigan State Col., Div. of Bus. Admin., East Lansing, Mich. (1942)
LEMLER, Melvin F., 221 E. 78th St., New York 21, N.Y. (1950)
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LEONARD, Joy L., 4519 N. 106th St., Milwaukee 13, Wis. (1927)
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LEONARD, William N., Pennsylvania State Col., Dept. of Econ. and Com., State College, Pa. (1940)
LEONARD, William R., Statis. Office, United Nations, Lake Success, N.Y. (1929)
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LESLIE, Grey, 2480 16th St., N.W., Washington, D.C. (1946)
Le SOURD, David A., Univ. Heights, Apt. 2B, Burlington, Vt. (1949)
LESSER, Arthur, Jr., Stevens Inst. of Tech., Econ. of Eng. Dept., Hoboken, N.J. (1940)
LESSLER, Richard S., Dancer-Fitzgerald-Sample, 347 Madison Ave., New York 17, N.Y. (1952)
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LEVINE, Marvin, 60 Caryl Ave., Yonkers, N.Y. (1946)
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LEWIS, Robert M., Winthrop Dr., W., Riverside, Conn. (1943)
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LININGER, Charles A., Col. of the Seneca, Geneva N.Y. (1950)
LINK, Robert G., 17 Green Gardens Ct., East Haven Conn. (1942)
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LION, Donor, MSA, American Embassy, Oslo, Norway (1946)
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LIPSON, Harry A., Box 21, University, Ala. (1950)
LIPSTEIN, Benjamin, 628 Northampton Dr., Silver Spring, Md. (1945)
LISHAN, John M., 120 S. Sycamore, Los Angeles, Calif (1946)
LISS, Samuel, 114 Shepherd St., Chevy Chase 15, Md (1947)
LISSNER, Will, c/o New York Times, Times Sq. New York 18, N.Y. (1944)
LITMAN, Simon, 1108 S. Lincoln Ave., Urbana, Ill (1909)
LITTERER, Oscar F., 4504 17th Ave., S., Minneapolis Minn. (1941)
LITTLE, Leo T., 1, Execliff, Trefusis Ter., Exmouth Devon, England. (1950)
*LITTLE, Walter J., 117 Mapes Ave., Nutley 10, N.J (1952)
LIU, Ta-Chung, 920 Patton Dr., Silver Spring, Md (1949)
LIVINGSTON, Don A., 5920 Pershing, St. Louis, Mo (1950)
LIVINGSTON, Joseph A., Philadelphia Bulletin Philadelphia 5, Pa. (1940)
LIVINGSTON, S. Morris, 910 S. Michigan Ave., Room 430, Chicago 80, Ill. (1944)
LLEWELLGNI, (Mrs.) Emma C., Sarah Lawrence Col. Bronxville, N.Y. (1951)
LOBENSTINE, James C., Beirut, Second Secy., Dept of State, Washington 25, D.C. (1951)
LOBO, Orlando D. H., 2003 Francisco St., Berkeley Calif. (1949)
LOCKARD, E. Kidd, West Virginia Wesleyan Col. Buckhannon, W.Va. (1947)
LOCKE, Henry D., Liberty Mutual Ins. Co., 175 Berkeley St., Boston, Mass. (1935)
LOCKHART, Oliver C., 91 Front St., Exeter, N.H. (1904)
LOCKLEY, Lawrence C., 3518 University Ave., Los Angeles 7, Calif. (1949)
LOCKLIN, D. Philip, 1106 S. Garfield St., Urbana, Ill (1922)
LOCKS, Mitchell, Univ. of Oklahoma, Norman, Okla (1947)
LOCKWOOD, William W., Princeton Univ., Sch. of Pub. and Int. Affairs, Princeton, N.J. (1947)

*LOCKYER, Charles R., Univ. of Kentucky, Col. of Com., Lexington, Ky. (1952)
†LOEB, Isidor, 105 Arundel Pl., St. Louis 5, Mo. (1892)
LOESCHER, Samuel M., Indiana Univ., Econ. Dept., Bloomington, Ind. (1949)
LOEWY, Harris, 5714 Woodland Rd., Des Moines 12, Iowa. (1947)
LOFT, Jacob, 909 E. 29th St., Brooklyn 10, N.Y. (1940)
LOFTUS, John A., New Delhi-Counselor of Embassy, Dept. of State, Washington 25, D.C. (1940)
LOGAN, Harold A., Univ. of Toronto, Dept. of Econ., Toronto, Ont., Canada. (1920)
LOH, Arthur T. Y., 640 Riverside Dr., Apt. 11G, New York 31, N.Y. (1950)
LOHMAN, Philipp H., Univ. of Vermont, Dept. of Econ., Burlington, Vt. (1944)
LOMAN, Harry J., Univ. of Pennsylvania, Wharton Sch., Philadelphia 4, Pa. (1934)
LONG, Clarence D., Johns Hopkins Univ., Baltimore 18, Md. (1939)
LONG, Dean, 1901 E. Mulberry, Evansville, Ind. (1928)
LONG, John J., Fryeburg, Me. (1930)
LONG, Louis J., Wells Col., Aurora, N.Y. (1940)
§LONG, Thomas G., 1436 Chicago Blvd., Detroit, Mich. (1924)
LONGSTREET, James R., Unit No. 8, 1407 Central St., Evanston, Ill. (1951)
LOONEY, Gordon M., Libbey-Owens-Ford Glass Co., 1034 Nicholas Bldg., Toledo 3, Ohio. (1947)
LOOSMORE, Robert J., 260 Metcalfe St., Ottawa, Ont., Canada. (1950)
LOPATA, Richard S., Poetzinger, Dechert & Kielty, 333 N. Michigan Ave., Chicago, Ill. (1952)
LOPATA, Simon, 144-38 76th Ave., Flushing 67, N.Y. (1943)
LOPEZ-FRESQUET, Rufo A., 27 No. 468, Apartamento 12, Vedado, Havana, Cuba. (1943)
LORD, A. Matthew, 21–40 35th Ave., Long Island City 6, N.Y. (1949)
LORENZ, Max O., 1418 Isabelle Ave., Mountain View, Calif. (1905)
LORENZ, Robert A., Univ. of Georgia, Athens, Ga. (1952)
LORENZO, Cesar M., Cent. Bank of the Philippines, Manila, Philippines. (1949)
LORIG, Arthur N., Univ. of Washington, 210 Commerce Hall, Seattle, Wash. (1936)
LORWIN, Lewis L., 45 Christopher St., New York 14, N.Y. (1916)
LOSEE, Gordon C., 4117 N. Fourth St., Apt. 2, Buckingham Community, Arlington, Va. (1937)
LOTHIAN, John E., 309 Willow Ave., Lyndhurst, N.J. (1947)
LOTSHAW, Elmer P., Washington Univ., Sch. of Bus. and Pub. Admin., St. Louis, Mo. (1949)
LOUCKS, William N., Univ. of Pennsylvania, Logan Hall, Philadelphia, Pa. (1925)
LOUDEN, Clarke B., 201 W. Greenway Blvd., Falls Church, Va. (1950)
LOUDON, Elizabeth M., 532 Knollwood Dr., Falls Church, Va. (1952)
LOUGH, William H., 285 Madison Ave., New York, N.Y. (1908)
LOUGHEED, William F., Canadian Bank of Com., 25 King St. W., Toronto, Ont., Canada. (1944)
LOUHI, Kullervo, Univ. of Chicago, Sch. of Bus., Chicago 37, Ill. (1949)
LOUNSBURY, Raymond H., Vergennes, Vt. (1928)
LOUX, Maynard Z., Rensselaer Poly. Inst., Troy, N.Y. (1951)
LOVASS, Leslie, 3815 Lorcom Lane, Arlington, Va. (1936)
LOVE, Joseph L., P.O. Box 2246, Capitol Sta., Austin 11, Tex. (1940)
§LOVE, Robert A., 17 Lexington Ave., New York, N.Y. (1925)
LOVEDAY, Alexander, Nuffield Col., 17 Banbury Rd., Oxford, England. (1941)
LOVEJOY, Wallace F., 1505 Madison St., Madison 5, Wis. (1950)
LOVENSTEIN, Meno, Ohio State Univ., Dept. of Econ., Columbus 10, Ohio. (1945)
LOVERDOS, Alexander, 530 Riverside Dr., New York, N.Y. (1945)
*LOW, Richard E., 51 Perkins Hall, Cambridge 38, Mass. (1952)
LOWE, Adolph, 10 Park Ter. E., New York, N.Y. (1941)
LOWENSTEIN, Frank, 9619 Bristol Ave., Silver Spring, Md. (1947)
§LOWENTHAL, Esther, 21 Dryads Green, Northampton, Mass. (1910)
LOWERY, Dave, 894 N. Kensington St., Arlington, Va. (1947)
LOWMAN, Fern, Southwestern State Col., Dept. of Com., Weatherford, Okla. (1949)
LUBELL, Harold, MSA/MF American Embassy, Paris 8, France. (1946)
LUBIN, Isador, 2 Park Ave., Room 1901, New York 16, N.Y. (1932)
LUCAS, Arthur F., Clark Univ., Worcester, Mass. (1921)
LUCAS, John W., Univ. of Omaha, Omaha, Neb. (1935)
LUCAS, P. G., c/o Standard Vacuum Oil Co., P.O. Box 300, Davao City, Philippines. (1947)
LUCK, Thomas J., Univ. of Florida, Sch. of Bus., Gainesville, Fla. (1949)
LUDLOW, Howard T., 244 Branch Brook Dr., Belleville, N.J. (1951)
LUDLOW, William L., Muskingum Col., New Concord, Ohio. (1941)
§LUDMER, Henry, 134 Peach St., Park Forest, Ill. (1947)
LUDT, Rudolph E., c/o Calif. Texas Oil Co., 551 Fifth Ave., New York 17, N.Y. (1951)
LUDTKE, James B., Univ. of Massachusetts, Sch. of Bus. Admin., Amherst, Mass. (1951)
LUKACZER, Moses, 7012 Braeburn Pl., Bethesda 14, Md. (1938)
LUKE, Raymond H., 6409 Fairfax Rd., Chevy Chase 15, Md. (1952)
LUKENS, Samuel J., 30 Waconah Rd., Worcester 5, Mass. (1930)
LUMPKIN, Katharine D., 54 Prospect St., Northampton, Mass. (1932)
LUMPKIN, R. Pierce, 1704 Bellevue Ave., Richmond 27, Va. (1946)
*LUNAU, Horst E., 1531 E. 78th St., Cleveland, Ohio. (1952)
LUND, Richard J., 1998 Cambridge Blvd., Columbus 12, Ohio. (1951)
LUNDBERG, Kenneth V., Central Washington Col., Div. of Soc. Sci., Ellensburg, Wash. (1950)
LUNDEN, Laurence R., 3700 48th Ave., S., Minneapolis, Minn. (1930)
LUONGO, Nicholas A., American Embassy, Addis Ababa, Ethiopia. (1952)
LUPPICHINI, Giuseppe, c/o Italian Tech. Del., 2401 15th St., N.W., Washington 9, D.C. (1949)
*LURENSKY, Robert L., 84 Mandalay Rd., Newton Centre 59, Mass. (1951)
LURIE, Helen, 1310 18th St., N.W., Apt. 1, Washington, D.C. (1952)
LURIE, Melvin, 1315 E. 53rd St., Chicago 15, Ill. (1949)
LURIÉ, Samuel, 390 Riverside Dr., New York, N.Y. (1943)
LUSHER, David W., 5812 Wilmett Rd., Bethesda, Md. (1941)
LUTFALLA, Georges, 21 Pl. des Vosges, Paris, France. (1947)
LUTHER, Ernest W., c/o State Bank of Ethiopia, Addis Ababa, Ethiopia. (1950)
LUTHER, Rodney F., 7980 Cherrystone Ave., Van Nuys, Calif. (1948)
LUTHRINGER, George F., 4401 Cathedral Ave., Washington 16, D.C. (1930)
LUTIN, David L., 646 Beacon Rd., Silver Spring, Md. (1951)
LUTOLF, Franz, Schweizerisches Institut für Aussenhandelsforschung, Handelshochschule, Bahnhofplatz 7, St. Gallen, Switzerland. (1950)
LUTZ, Friedrich A., Munstergasse 9, Bei Hunold, Zurich, Switzerland. (1938)
LUTZ, John P., Univ. of Pennsylvania, Wharton Sch., Fin. Dept., Philadelphia 4, Pa. (1942)
LUTZ, Warren H., Pa. State Employ. Service, 45 S. 15th St., Philadelphia 2, Pa. (1941)
LYNCH, David, 3679 Highwood Dr., S.E., Washington 20, D.C. (1948)
LYND, Robert S., Columbia Univ., Fayerweather Hall, New York 27, N.Y. (1939)
LYNE, James G., 30 Church St., Room 940, New York, N.Y. (1935)
LYNIP, Benjamin F., Jr., c/o Calif. and Hawaiian

Sugar Ref. Corp., 215 Market St., San Francisco 5, Calif. (1951)
LYNN, Arthur D., Jr., Ohio State Univ., Dept. of Econ., Hagerty Hall, Columbus 10, Ohio. (1951)
LYNN, Fred L., 4103 72nd St., Landover Hills, Md. (1945)
††LYNSKEY, Joseph V., Bansley and Kiener, 130 N. Wells St., Chicago 6, Ill. (1946)
LYON, Leverett S., 1 N. La Salle St., Chicago, Ill. (1923)
LYON, Robert, Jr., 918 18th St., N.W., Apt. 109, Washington, D.C. (1952)
LYONS, James A., P.O. Box 5553, Col. Sta., Raleigh, N.C. (1944)
LYONS, Will, 113 West Ave., Great Barrington, Mass. (1945)

MAARSCHALK, Conrad G. D., Planomatic Corp., R.D. 2, Box 158, Bound Brook, N.J. (1950)
MACARIO, Santiago P., Cepal, Apartado Postal 20376, Mexico, D.F. (1944)
MACAULAY, Fred R., 11 Clover Dr., Great Neck, N.Y. (1919)
MacDONALD, Gordon D., Real Estate Bd. of N.Y., 12 E. 41st St., New York 17, N.Y. (1950)
MacDONALD, Lois, New York Univ., Washington Square Col., New York 3, N.Y. (1944)
*MACDONALD, R. G., 1319 Mound, Madison 5, Wis. (1947)
*MACDONALD, Robert M., 218 Yale Sta., New Haven, Conn. (1952)
MACDONALD, Wendell D., 294 Washington St., Boston, Mass. (1947)
MACE, Arthur E., 2366 Noble Rd., Cleveland Heights 21, Ohio. (1946)
MacEACHRON, David W., Bur. of the Budget, Int. Div., Washington 25, D.C. (1949)
MacFARLANE, David L., Box 224, Macdonald College, Que., Canada. (1947)
MacGIBBON, Duncan A., McMaster Univ., Hamilton, Ont. Canada. (1911)
MacGOWAN, Thomas G., 660 Nome Ave., Akron 20, Ohio. (1945)
MacGREGOR, Donald C., Univ. of Toronto, Dept. of Polit. Econ., Toronto 5, Ont., Canada. (1930)
MACGREGOR, Wallace, c/o Climax Molybdenum Co., 500 Fifth Ave., New York 18, N.Y. (1949)
MACHISAK, John C., Bur. of Labor Statis., Ind. Hazards Br. (Spec. Studies), Washington 25, D.C. (1953)
MACHLUP, Fritz, Johns Hopkins Univ., Dept. of Polit. Econ., Baltimore 18, Md. (1935)
MACIE, Henry J., 5350 S. 8th Ave., La Grange, Ill. (1950)
MacIVOR, Roderick E., R. 1, Box 90, Sausalito, Calif. (1952)
MACK, Russell H., 31 Whitemarsh Rd., Ardmore, Pa. (1931)
MACK, Ruth P., Nat. Bur. of Econ. Res., 1819 Broadway, New York 23, N.Y. (1941)
MacKENZIE, T. Findlay, 151 W. 12th St., Apt. 35, New York 11, N.Y. (1928)
MACKINTOSH, William A., Queen's Univ., Kingston, Ont., Canada. (1918)
MacLEISH, John E., 134 S. La Salle St., Chicago, Ill. (1934)
MacLEOD, William M., 352 MacLaren, Ottawa, Ont., Canada. (1948)
MacNAB, John E., 97 Barrette St., Apt. 1, Ottawa 2, Ont., Canada. (1952)
MacNABB, Richard R., 1725 Orrington Ave., Evanston, Ill. (1949)
MACON, Hershal L., Timberlake Dr., R. 3, Knoxville, Tenn. (1954)
MacRAE, Duncan, Jr., 1707 Cambridge St., Cambridge 38, Mass. (1943)
MACY, C. Ward, Univ. of Oregon, Dept. of Econ., Eugene, Ore. (1935)
MADDOX, James G., Int. Devel. Services, Inc., 630 Fifth Ave., Room 968, New York 20, N.Y. (1935)
MADDOX, James R., 5046 E. Vassar, Denver, Colo. (1947)
MADELEINE, Sister M. Grace, Immaculata Col., Immaculata, Pa. (1936)
MAESTRI, Raúl, 17 No. 66, Apt. 4, Almendares, Marianao, Cuba. (1948)
MAEVERS, Martin, 852 Balra Dr., El Cerrito 8, Calif. (1947)

MAGDOFF, Harry S., 15 E. 40th St., New York 1 N.Y. (1936)
*MAGEE, Edwin W., Jr., 133 S. First Ave., Mt. Vernc N.Y. (1953)
MAGEE, Mabel A., Wells Col., Aurora, N.Y. (1925)
MAGEE, Richard H., Standard Register Co., Dayton Ohio. (1946)
MAGNUS, Erna F. R., 2 W. University Pkwy., Bal more 18, Md. (1948)
MAGNUSSON, Leifur, 730 W. 8th St., Claremo Calif. (1924)
MAGOFFIN, John W., Minneapolis-Honeywell Regul tor Co., 2753 4th Ave., S., Minneapolis. Minn. (195
MAGRATH, C. B., 199 Birch St., Winnetka, Ill. (1944
MAHER, Edward D., Univ. of Pennsylvania, Fi Dept., Philadelphia 4, Pa. (1952)
*MAHHOUK, Adnan, American Univ. of Beir P.O.B. 250, Beirut, Lebanon. (1952)
*MAHONEY, Thomas A., Univ. of Minnesota, In Rela. Center, Minneapolis 14, Minn. (1951)
MAIER, Frank H., 2500-H Forde Ave., Nashville Tenn. (1948)
MAIR, George F., 223-A Eisenhower St., Princeto N.J. (1947)
MAISEL, Sherman J., Univ. of California, Sch. of Bu Admin., Berkeley 4, Calif. (1947)
MAJEWSKI, Louis J., 300 W. Rosemary Lane, Fa Church, V. (1948)
MALACH, Vernon W., Royal Mil. Col. of Canad Kingston, Ont., Canada. (1948)
MALAKOFF, A. L., 56 W. 106th St., New York 2 N.Y. (1952)
MALENBAUM, Wilfred, 64 Botsford Rd., Chestn Hill 67, Mass. (1952)
MALICK, Clay P., Univ. of Colorado, Dept. of Eco Boulder, Colo. (1943)
MALIN, Max, 2032 Fort Davis St., S.E., Washingt 20, D.C. (1944)
MALISOFF, Harry, Brooklyn Col., Dept. of Eco Bedford Ave. and Ave. H, Brooklyn 10, N.Y. (195
MALLERY, Otto T., 9006 Crefeld St., Philadelphia, P (1942)
MALM, F. Theodore, Univ. of California, Sch. of Bu Admin., Berkeley 4, Calif. (1952)
MALONE, Carl C., 621 5th, Ames, Iowa. (1941)
MALONEY, Harry D., 424 E. Cottage Grove S Bloomington, Ind. (1949)
MALOTT, E. Orth, 122 Hartswick Ave., State Colleg Pa. (1929)
**MALOTT, Edward O., Jr., 122 Hartswick Ave., Sta College, Pa. (1941)
MALTBIE, Milo R., 580 West End Ave., New York 2 N.Y. (1898)
MANCELL, Paul M., 711 Collegewood, Ypsilan Mich. (1948)
MANCHESTER, Alden C., 9 Woodcliffe Rd., Lexin ton 73, Mass. (1949)
MANCINI, Guglielmo, Via Montevideo 13, Rom Italy. (1951)
MANDEL, Arthur A., Univ. of California, Dept. Econ., Los Angeles 24, Calif. (1947)
MANDEL, Bernard, 318 N. Thomas St., Arlingto Va. (1940)
MANDELL, Maurice I., Cleveland Col., Sch. of Bu Cleveland, Ohio. (1951)
MANDEVILLE, Merten J., Univ. of Illinois, 304 Dav Kinley Hall, Urbana, Ill. (1946)
†MANGOLD, George B., 3764 Olympiad Dr., L Angeles, Calif. (1910)
MANHART, Lewis F., R.F.D. 4, Box 230, Bowli Green, Ohio. (1942)
MANLY, Lewis F., Tufts Col., Medford 55, Ma (1928)
MANN, Fritz K., 25 Williams Lane, Chevy Chase, M (1936)
MANN, Martin, 1666 E. 12th St., Brooklyn 29, N. (1950)
MANNING, Travis W., Univ. Farm, Div. of Agri Econ., St. Paul 1, Minn. (1949)
*MANOS, Stella, 20-01 36th St., Astoria 5, N.Y. (195
*MANOVILL, Robert J., 11601 Gail Pl., Silver Sprin Md. (1952)
MANSON, Julius J., N.Y. State Bd. of Med., 2 Broadway, New York 7, N.Y. (1943)
MAO, Cho-ting, Col. of Wooster, Dept. of Eco Wooster, Ohio. (1952)
MARBERRY, Charles E., Univ. of Arkansas, Col. Bus. Admin., Fayetteville, Ark. (1952)

MARBURG, Theodore F., 1595 Hewitt Ave., St. Paul Minn. (1938)
MARCH, Michael S., 1802 Eldon Lane, Silver Spring, Md. (1946)
MARCOUX, Dale C., Washburn Univ., Topeka, Kans. (1947)
MARCUS, Edward, 700 Ocean Ave., Brooklyn 26, N.Y. (1943)
MARCUSE, William, 29 Eastford St., Hartford, Conn. (1949)
MARENGO, Louis, 841 S. Greenbrier St., Arlington, Va. (1952)
MARGET, Arthur W., Bd. of Gov. of the Fed. Res. System, Washington 25, D.C. (1926)
MARGOLIN, Raphael, 7411 Hancock Ave., Takoma Park, Md. (1947)
MARGOLIS, Julius, Stanford Univ., Dept. of Econ., Stanford, Calif. (1944)
MARIMONT, Martin L., 12203 Edgemont St., Wheaton, Md. (1948)
MARIN, Kenneth J., 111 S. Scott St., Rensselaer, Ind. (1948)
MARK, Jerome A., 2823 Gainesville St., S.E., Washington 20, D.C. (1951)
MARK, Shelley M., 419 Pau St., Honolulu 4, Hawaii. (1950)
MARKHAM, Jesse W., Vanderbilt Univ., Dept. of Econ. and Bus. Admin., Nashville 4, Tenn. (1944)
MARKLE, Herbert J., 1106 Mt. Vernon Rd., Memphis, Tenn. (1947)
MARKOVITZ, Jerome L., 1032 Bankers Securities Bldg., Philadelphia 7, Pa. (1946)
MARKS, Marion H., Crown Zellerbach Corp., 343 Sansome St., San Francisco 19, Calif. (1950)
MARKS, Marvin M., 3514 Welborn, Dallas, Tex. (1945)
MARONI, Yves R., 4214 Fourth St., S.E., Washington 20, D.C. (1947)
MARQUARD, Elva, 1112 16th St., N.W., Washington 6, D.C. (1940)
MARQUIS, Ralph W., U. S. Forest Service, 102 Motors Ave., Upper Darby, Pa. (1929)
MARRAH, George L., 475 Brook Rd., Milton, Mass. (1953)
MARSCHAK, Jakob, Cowles Comm., Univ. of Chicago, Chicago 37, Ill. (1939)
MARSH, Charles F., 705 Powell St., Williamsburg, Va. (1929)
MARSH, Donald B., Royal Bank of Canada, 360 St. James St. W., Montreal 1, Que., Canada. (1941)
MARSH, Richard C., 11628 Riverside Dr., North Hollywood, Calif. (1949)
MARSHALL, F. Ray, 971 Gill Ct., Apt. D4, Albany 6, Calif. (1950)
MARSHALL, George, 35 Beekman Pl., New York 22, N.Y. (1928)
MARSHALL, Herbert, Dominion Bur. of Statis., Ottawa, Ont., Canada. (1947)
MARSHALL, Howard D., Pleasant Valley, Dutchess Co., N.Y. (1948)
MARSHALL, Leon C., 7007 Rolling Rd., Chevy Chase 15, Md. (1904)
MARSHALL, Stewart M., 430 Nevada Ave., Palo Alto, Calif. (1933)
MARTIN, Boyce F., 501 S. 2nd St., Louisville 2, Ky. (1940)
MARTIN, David C., c/o Pittsburgh Post-Gazette, Pittsburgh, Pa. (1950)
MARTIN, David D., Washington Univ., Dept. of Econ., St. Louis 5, Mo. (1951)
MARTIN, Edgar W., P.O. Box 593, Latham, N.Y. (1940)
MARTIN, James W., 241 Tohama Rd., Lexington, Ky. (1923)
MARTIN, Jean-Pierre, 85-05 35th Ave., New York 72, N.Y. (1951)
MARTIN, John L., 402 First Ave., Lyndalia, Newport, Del. (1949)
*MARTIN, June B. (Mrs. Edgar W.), P.O. Box 593, Latham, N.Y. (1947)
MARTIN, Lee R., North Carolina State Col., Dept. of Agric. Econ., Raleigh, N.C. (1947)
MARTIN, Leonard W., St. Louis Univ., Sch. of Com. and Fin., 3674 Lindell Blvd., St. Louis 8, Mo. (1948)
MARTIN, Margaret E., 1510 N. Herndon St., Arlington 1, Va. (1938)
MARTIN, Robert F., 312 Shoreham Bldg., Washington 5, D.C. (1939)
MARTIN, William H., 11 E. Davenport St., Iowa City, Iowa. (1952)
*MARTINSEK, Thomas A., 3371 E. 70th St., Cleveland 27, Ohio. (1953)
MARVIN, Philip R., Commonwealth Eng. Co., 1771–77 Springfield St., Dayton 3, Ohio. (1950)
MARX, Daniel, Jr., 14 N. Balch St., Hanover, N.H. (1941)
MARX, Roy L., 844 S. Frederick St., Apt. 241A, Arlington, Va. (1948)
MARZ, Edward, Hofstra Col., Dept. of Econ., Hempstead, N.Y. (1948)
MASEK, John, 801 Elizabeth Dr., Winter Park, Fla. (1949)
MASIKO, Peter, Jr., 6020 Addison St., Chicago, Ill. (1937)
MASON, Edward S., 9 Channing St., Cambridge, Mass. (1934)
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MASSEL, Mark S., Bell, Boyd & Marshall, 135 S. La Salle St., Chicago, Ill. (1936)
MASSELL, Richard C., 16 Alward Rd., Roslindale 31, Mass. (1950)
MASSEY, Ralph J., 41 Snell Hall, 5709 Ellis Ave., Chicago 37, Ill. (1951)
MASSON, Robert L., Grad. Sch. of Bus. Admin., Soldiers Field, Boston, Mass. (1923)
MASTEN, John T., Univ. of Kentucky, Col. of Com., Lexington, Ky. (1948)
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MATCHETT, Gerald J., Illinois Inst. of Tech., Dept. of Econ., Chicago 16, Ill. (1946)
MATECKI, Bronislaw E., Lynchburg Col., Lynchburg, Va. (1949)
MATER, Dan H., 8101 MacArthur Blvd., Bethesda 14, Md. (1948)
MATHERLY, Walter J., Univ. of Florida, Col. of Bus. Admin., Gainesville, Fla. (1952)
MATHESON, Kenneth G., 216 Radnor St., Bryn Mawr, Pa. (1944)
MATHIS, Paul C., Univ. of South Dakota, Vermillion, S.D. (1948)
MATLOCK, Wallace H., 180 E. California St., Pasadena 1, Calif. (1947)
**MATLOCK, William H., c/o Wallace H. Matlock, 180 E. California St., Pasadena 1, Calif. (1948)
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MATTHEWS, C. A., Annapolis, Md. (1949)
MATTHEWS, Charles D., 21 Cornelia Dr., Quaker Park Estates, Alexandria, Va. (1952)
MATTICE, Royal, 925 W. Jefferson St., Tallahassee, Fla. (1949)
MATTILA, John M., Wayne Univ., Dept. of Econ., Detroit 1, Mich. (1949)
¶MATTIOLI, Raffaele, Administratore Delegato, Banca Commerciale Italiana, Piazza della Scala, 6, Milan, Italy. (1938)
MAULDON, Frank R. E., Univ. of Western Australia, Nedlands, Perth, Western Australia. (1950)
MAURER, (Mrs.) Lucille D., 1021 Forest Glen Rd., Silver Spring, Md. (1943)
MAURER, Stephen A., 1040 Genesee St., Trenton 10, N.J. (1953)
MAURER, William J., 108 Overlook Ave., Leonia, N.J. (1940)
MAVERICK, Lewis A., 701 S. Oakland Ave., Carbondale, Ill. (1939)
MAX, William D., 208 Sterling St., Brooklyn 25, N.Y. (1921)
MAXWELL, James A., Clark Univ., Worcester, Mass. (1925)
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MAY, Elizabeth S. (Mrs. Geoffrey), Wheaton Col., Norton, Mass. (1935)
MAY, F. B., 605 W. 26th St., Austin 12, Tex. (1951)
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MAY, John W., Box 378, R.D. 2, Washington, Pa. (1940)
MAY, Patricia, Tulane Univ., Col. of Bus. Admin., New Orleans, La. (1952)

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MAYER, Erwin S., Univ. of Washington, Dept. of Econ., Seattle 5, Wash. (1951)
MAYER, Joseph, Miami Univ., Chestnut Lane, Oxford, Ohio. (1921)
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MAYER, Lawrence A., 9 E. 97th St., New York, N.Y. (1948)
MAYER, Leo Kenneth, 6 Polo Rd., Great Neck, L.I., N.Y. (1935)
MAYER, Robert W., Univ. of Illinois, Dept. of Econ., Urbana, Ill. (1933)
MAYER, Thomas, 5324 Colorado Ave., N.W., Washington 11, D.C. (1946)
MAYHILL, Roger, Purdue Univ., Hist. Dept., West Lafayette, Ind. (1945)
MAYNARD, Eugene L., 1414 Gregory, Wilmette, Ill. (1929)
MAYNARD, Harold H., Ohio State Univ., Col. of Com., Columbus, Ohio. (1921)
MAYNE, Alvin, 1309 Oak Ridge Rd., Falls Church, Va. (1946)
MAYNES, E. Scott, 1109 Brooklyn Ave., Ann Arbor, Mich. (1947)
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MAYRER, George F., 26 Woodland Ave., Nutley 10, N.J. (1953)
MAZZOCCO, William J., OSR, 2 rue St. Florentin, Paris, France. (1949)
McALLISTER, Harry E., State Col. of Washington, Dept. of Econ., Pullman, Wash. (1950)
McALLISTER, Phyllis P., 5345 S. France Ave., Minneapolis 10, Minn. (1952)
McCABE, David A., Herrontown Rd., Princeton, N.J. (1909)
McCABE, Norbert G., R. 2, Xenia, Ohio. (1949)
McCAHAN, David, 607 Strath Haven Ave., Swarthmore, Pa. (1934)
**McCALLEY, Hazel S. (Mrs. John W.), 2440 Sedgwick Ave., University Heights 68, N.Y. (1952)
McCALLEY, John W., 2440 Sedgwick Ave., University Heights 68, N.Y. (1945)
McCARTHY, James L., 121 Dorchester Ave., Waterville, Conn. (1952)
McCARTHY, Philip J., 6211 Morley Ave., Los Angeles 56, Calif. (1949)
McCAULEY, John S., U. S. Dept. of Labor, Bur. of Appren., Res., and Statis., Washington 25, D.C. (1952)
McCAULEY, William F., UNCACK, Army Unit 8201, APO 59, c/o Postmaster, San Francisco, Calif. (1951)
**McCLELLAND, Anne R. (Mrs. Donald H.), ECA Mission to Italy, 62 Via Veneto, Rome, Italy. (1952)
McCLELLAND, Donald H., ECA Mission to Italy, 62 Via Veneto, Rome, Italy. (1948)
McCLELLAND, Mary E., Life Ins. Asso. of Amer., 488 Madison Ave., New York 22, N.Y. (1941)
McCLINTIC, Joseph O., San Diego State Col., San Diego 15, Calif. (1937)
McCLUNG, Nelson D., 2916 Second St., N., Arlington, Va. (1952)
†McCLUNG, Reid L., Univ. of Southern California, Los Angeles, Calif. (1915)
McCOLLOUGH, Elzy V., Tarkio Col., Tarkio, Mo. (1936)
McCOLM, George T., 147-37A Charter Rd., Jamaica 2, N.Y. (1949)
McCOMAS, Frederick W., Jr., 72 Webster St., Malverne, N.Y. (1946)
McCONAGHA, William A., 932 E. Commercial St., Appleton, Wis. (1925)
*McCONNELL, Campbell R., B-188 Quadrangle, Iowa City, Iowa. (1951)
McCONNELL, Joseph L., Univ. of Illinois, Dept. of Econ., Urbana, Ill. (1942)
§McCORMACK, Alfred, 15 Broad St., New York 5, N.Y. (1941)
McCRACKEN, Harlan L., Louisiana State Univ., Himes Hall, Baton Rouge, La. (1933)
McCRACKEN, Paul W., Univ. of Michigan, Sch. of Bus. Admin., Ann Arbor, Mich. (1942)

McCREARY, James W., 295 Grizzly Peak, Berkeley Calif. (1938)
McCUTCHAN, Cuyler W., 2490 Tuxedo, Detroit Mich. (1950)
McDERMOTT, John P., 76 Deerlake Dr., Nort Babylon, N.Y. (1949)
McDERMOTT, Mary E., 315 S. 16th St., Philadelph 2, Pa. (1942)
McDERMOTT, Thomas J., Holy Cross Col., Eco Dept., Worcester, Mass. (1949)
McDIARMID, Orville J., MSA, STEM, APO 928, c/ Postmaster, San Francisco, Calif. (1939)
McDONALD, Joseph L., Hanover, N.H. (1925)
McDONALD, S. L., Univ. of Texas, Dept. of Econ Austin 12, Tex. (1950)
*McDONALD, Walter J., 98 Lexington St., Wate town 72, Mass. (1952)
McDONALD, William G., USMA, Dept. of Soc. Sc West Point, N.Y. (1952)
McDONNELL, Daniel C., 238 S. Madison Ave., Upp Darby, Pa. (1950)
McDONOUGH, Charles A., 18 Tremont St., Bosto Mass. (1914)
McEACHREN, John W., Touche, Niven, Bailey Smart, 1380 Nat. Bank Bldg., Detroit 26, Mic (1948)
§McENROE, Jack A., Box 631, Highland, N.Y. (195
McEVOY, Raymond H., 504 Johnson Rd., Falls Churc Va. (1947)
McEWEN, Robert J., Boston Col., Col. of Admin Chestnut Hill 67, Mass. (1942)
McFARLAND, M. Carter, HFA, Office of Admin Washington 25, D.C. (1947)
McFAYDEN, Ross, 1563 Washington, Denver 3, Col (1952)
McFEATERS, Marvin C., 313 N. West St., Fal Church, Va. (1941)
McFERRIN, John B., Univ. of Florida, Bldg. I Gainesville, Fla. (1950)
McGANN, Paul W., 205 S. West St., Falls Church, V (1942)
McGARRY, Edmund D., Univ. of Buffalo, Buffal N.Y. (1923)
McGEE, John S., Univ. of California, Dept. of Econ Los Angeles 24, Calif. (1951)
McGILL, Kenneth H., 503 Stratford Dr., Alexandri Va. (1948)
McGINLEY, James J., Fordham Univ., New York 5 N.Y. (1942)
McGRATH, Lawrence P., Seton Hall Univ., Sou Orange, N.J. (1950)
McGRATH, William H., 3819 92nd Ave., N.E., Bell vue, Wash. (1919)
McGRAW, Booker T., 3036 Park Pl., N.W., Washin ton, D.C. (1931)
McGREGOR, Harlan E., Avondale Farm, Newbur Md. (1937)
McGREW, John Gilbert, Fenn Col., Cleveland, Ohi (1941)
**McGUIGAN, Eileen L. (Mrs. James A. L.), 5 Campbell St., Pittsburgh 21, Pa. (1952)
McGUIGAN, James A. L., 542 Campbell St., Pitt burgh 21, Pa. (1952)
McGUIRE, Carl W., 770 18th St., Boulder, Col (1937)
McGUIRE, Charles B., 5649 Dorchester, Chicago, I (1949)
McGUIRE, Christine H., 2231 E. 67th St., Chicago 4 Ill. (1941)
McGUIRE, Constantine E., Box 447, Geneva, N.Y (1922)
McGUIRE, John A., 870½ Eastern Ave., Schenectad N.Y. (1949)
McGUIRE, Joseph W., 34 W. 604th St., Shanks Villag Orangeburg, N.Y. (1950)
McHALE, Thomas R., 24 Blackstone Blvd., Prov dence, R.I. (1951)
McHUGH, Thomas F., 7410 Allison St., Landover Hil Md. (1946)
McILVAINE, William D., Jr., P.O. Box 6127, Unive sity, Ala. (1948)
McINTOSH, William J., Loyola Univ., Los Angeles 4 Calif. (1951)
McINTYRE, Francis E., Calif. Tex. Oil Co., 551 Fif Ave., New York, N.Y. (1938)
McIVOR, R. Craig, McMaster Univ., Hamilton, On Canada. (1948)

McKAY, Marion K., Univ. of Pittsburgh, Pittsburgh, Pa. (1921)
McKAY, Richard, 1426 21st St., N.W., Washington 6, D.C. (1943)
McKEAN, Roland N., 2121 Malcolm Ave., Los Angeles 25, Calif. (1947)
McKENZIE, Lionel W., Jr., Duke Univ., Dept. of Econ., Durham, N.C. (1952)
McKIE, James W., 87 Pierce Rd., Watertown 72, Mass. (1949)
McKINLEY, David H., Pennsylvania State Col., Econ. Dept., State College, Pa. (1947)
McKINLEY, Gordon W., 16 Orchard Rd., Florham Park, N.J. (1946)
McKINLEY, Samuel J., 74 Beacon St., Boston 8, Mass. (1928)
McKINNEY, David H., Box 163, University, Miss. (1936)
McKINNEY, George W., Jr., 3812 Howard Rd., Glenwood Farms, Richmond, Va. (1947)
McKINNEY, T. Charles, 1915 16th St., N.W., Apt. 2, Washington 9, D.C. (1951)
McKINSTRY, William J., 104 Annawon Ave., West Haven, Conn. (1947)
McKNIGHT, John, 645 E. 14th St., New York 9, N.Y. (1946)
*McKOWN, Roberta E., 727 E. 13th Ave., Eugene, Ore. (1952)
McLACHLIN, Harry D., c/o Shell Oil Co., 50 W. 50th St., New York 20, N.Y. (1949)
McLAIN, James M., 857 Kenyon St., Akron 11, Ohio. (1950)
McLAREN, Walter W., 21 Bayview Ave., Englewood Cliffs, N.J. (1911)
McLAUGHLIN, Glenn E., 3053 Ordway St., N.W., Washington 8, D.C. (1929)
McLAUGHLIN, Russell U., 5416 Charles St., Philadelphia 24, Pa. (1948)
McMAHON, Robert E., Univ. of Santa Clara, Santa Clara, Calif. (1949)
McMAHON, Thomas W., Jr., 484 Brookdale Rd., Union, N.J. (1950)
McMANUS, Thomas F., R. 4, Box 311-M, Vienna, Va. (1935)
McMARTIN, Arthur, 212 Gosford Rd., Adamstown 2N, N.S.W., Australia. (1947)
McMILLAN, S. Sterling, Western Reserve Univ., 167 Public Sq., Cleveland 14, Ohio. (1943)
McMILLAN, Thomas E., Jr., Box 1692, Univ. Sta., Austin, Tex. (1948)
*McMILLAN, Wendell M., Pennsylvania State Col., 301 Hort. Bldg., State College, Pa. (1952)
McMILLEN, Wayne L., Amer. Airlines, 100 Park Ave., New York 17, N.Y. (1952)
McMULLAN, Wilbur N., 504 Custis Rd., Glenside, Pa. (1931)
McMURRAY, Joseph P., Mayo, Md. (1944)
McNATT, Emmett B., Univ. of Illinois, 327 Commerce Bldg., Urbana, Ill. (1934)
McNAUGHTON, Wayne L., Univ. of California, Dept. of Bus. Admin., Los Angeles 24, Calif. (1949)
McNEILL, Clarence E., Univ. of Nebraska, Lincoln, Neb. (1919)
McNEILL, John W., 20528 Morewood Pkwy., Rocky River 16, Ohio. (1946)
McNICHOLS, Thomas J., 1725 Orrington Ave., Evanston, Ill. (1951)
McNULTY, James, Univ. of California, Sch. of Bus. Admin., Los Angeles 24, Calif. (1950)
McPETERS, W. Liddon, c/o Security Bank, Corinth, Miss. (1945)
McPHERSON, Edwin M., Grymes Hill Garden Apts., Apt. 2A, 504 Howard Ave., Staten Island, N.Y. (1950)
McPHERSON, William H., Inst. of Labor and Ind. Rela., 704 S. Sixth St., Champaign, Ill. (1923)
McPHERSON, William K., Univ. of Florida, Dept. of Agric. Econ., Gainesville, Fla. (1948)
McPHERSON, Woodrow W., P.O. Box 5368, State Col. Sta., Raleigh, N.C. (1946)
McVAY, Francis E., North Carolina State Col., Raleigh, N.C. (1946)
*McVEY, Frank L., 249 Shady Lane, Lexington, Ky. (1895)
McWHINNEY, Madeline, Fed. Res. Bank, Dom. Res. Div., 33 Liberty St., New York 45, N.Y. (1947)
MEACHAM, Charles H., 1101 Norton Ave., Glendale 2, Calif. (1952)
MEAD, Edward S., Univ. of Pennsylvania, Wharton Sch., Philadelphia 4, Pa. (1934)
MEAD, Walter J., Lewis and Clark Col., P.O. Box 149, Portland 8, Ore. (1951)
MEANS, Gardiner C., R. 1, Box 43, Vienna, Va. (1926)
*MEANY, Edward L., 5807 Plymouth Rd., Ann Arbor, Mich. (1953)
MEARS, Charles D., 4606 Harling Lane, Bethesda 14, Md. (1945)
*MEARS, Leon A., 1617 Fernwood Dr., Oakland 11, Calif. (1951)
MECKLING, William H., 5805 Carrollton Ave., Indianapolis, Ind. (1947)
MEE, John F., Indiana Univ., Bloomington, Ind. (1946)
MEEHAN, M. Joseph, 810 Dahlia St., N.W., Washington, D.C. (1940)
MEEHLING, Charles F., 628 E. 20th St., New York 9, N.Y. (1945)
MEEK, Gertrude P., Florida State Univ., Tallahassee, Fla. (1931)
MEEK, Howard B., Cornell Univ., Ithaca, N.Y. (1929)
MEEKER, Royal, 625 Whitney Ave., New Haven, Conn. (1903)
MEHTA, P. E., 17C, Maganlal Nagar, Charni Rd. Junc., Bombay 7, India. (1950)
MEIER, Gerald M., Williams Col., Dept. of Econ., Williamstown, Mass. (1943)
MEIGS, Alexander J., Univ. of Arkansas, Col. of Bus. Admin. 231, Fayetteville, Ark. (1949)
MEINKOTH, (Mrs.) Marian R., 835 Harvard Ave., Swarthmore, Pa. (1947)
MEISELMAN, David, 814 E. 54th St., Chicago 15, Ill. (1949)
MEISLIK, Estelle, 258 Henry St., Brooklyn 2, N.Y. (1946)
MELAMID, Alexander, 5424 Arlington Ave., New York 71, N.Y. (1949)
MELCHER, William, 1873 Glencoe Rd., Winter Park, Fla. (1934)
MELDER, Frederick E., 173 Woodland St., Worcester 3, Mass. (1934)
MELLIN, David, 119 Aldrich Rd., Columbus 14, Ohio. (1951)
MELLIN, Gilbert M., Tulane Univ., Col. of Com., New Orleans 18, La. (1940)
MELLINGER, Morris, 5534 N. Sawyer Ave., Chicago 25, Ill. (1950)
MELMAN, Seymour, Columbia Univ., Dept. of Ind. Eng., New York 27, N.Y. (1948)
MELNICK ABELIOK, Julio, Cas. 2402, Santiago, Chile. (1952)
MELNICOFF, David C., 1919 Chestnut St., Philadelphia 3, Pa. (1947)
MELOAN, Taylor W., Hoosier Ct. 26-2, Bloomington, Ind. (1952)
MELOE, Torleif, 71 Van Name Ave., Staten Island 3, N.Y. (1950)
MELTON, Lee J., Jr., Louisiana State Univ., Col. of Com., Dept. of Econ., Baton Rouge 3, La. (1951)
MELTON, R. B., Box 6132, T. C. Sta., Denton, Tex. (1945)
MELTZER, Bernard C., 933 Crosswick Rd., Jenkintown, Pa. (1948)
MENDELL, Herbert C., 504 E. 3rd St., Brooklyn 18, N.Y. (1948)
MENDELS, Ernst, c/o Revere Copper and Brass, Inc., 230 Park Ave., New York 17, N.Y. (1949)
MENDELSON, Morris, Pennsylvania State Col., Dept. of Econ., 112 Sparks, State College, Pa. (1947)
MENDERSHAUSEN, Horst, 33 Liberty St., New York 45, N.Y. (1943)
MENDEZ M., Jorge A., Calle 81, 9-25, Bogotá, Colombia. (1946)
MENEFEE, Robert G., Box 1255, Berea, Ky. (1952)
*MENGE, John A., 151 Magazine St., Cambridge 39, Mass. (1953)
MENNICK, William F., 6350 King Ave., Allen Park, Mich. (1952)
MENNIS, Edmund A., Wellington Fund, 1630 Locust St., Philadelphia 3, Pa. (1942)
*MERCADO, Julian D., Central Bank of the Philippines, c/o Dept. of Econ. Res., Manila, Philippines. (1952)
MERCER, Hugh H., Dickinson Col., Dept. of Econ., Carlisle, Pa. (1949)
MERCER, Norman A., Univ. of Florida, Col. of Bus. Admin., Dept. of Econ., Gainesville, Fla. (1949)
MERCHANT, Ely O., Box 465, Chino, Calif. (1910)

MEREDITH, L. Douglas, Nat. Life Ins. Co., Montpelier, Vt. (1929)
MERIAM, Richard S., Harvard Bus. Sch., Soldiers Field, Boston, Mass. (1914)
MERINO, Federico G., Casilla 1789, La Paz, Bolivia. (1947)
§MERKT, Oswald E., 33 Vista Dr., Little Silver, N.J. (1942)
MERLIN, S. D., 2408 37th St., N.W., Washington, D.C. (1948)
MERWIN, Charles L., Int. Monetary Fund, 1818 H St., N.W., Washington 6, D.C. (1946)
MERZBACH, L. H., P.O. Box 33, Southwestern Univ. Sta., Georgetown, Tex. (1946)
MESMER, Theodore C., Room 3063, United Nations, N.Y. (1948)
MESSEMER, Fred C., Jr., 150-18 75th Ave., Flushing 67, N.Y. (1951)
MESSIHA, Wahib, Univ. Fuad I, Faculty of Com., Giza, Egypt. (1951)
METAXAS, Basil N., Tenth Ave. Trad. Corp., 689 Tenth Ave., New York, N.Y. (1952)
METCALF, John E., 2500 K St., N.W., Apt. 309, Washington 1, D.C. (1950)
METTLER, John C., The Citadel, Charleston, S.C. (1950)
METZLER, Lloyd A., Univ. of Chicago, Dept. of Econ., Chicago 37, Ill. (1946)
†MEYER, Balthasar H., 1753 P St., N.W., Washington 6, D.C. (1889)
†MEYER, Carl, 231 S. La Salle St., Chicago, Ill. (1918)
¶MEYER, Eugene, Washington Post, Washington, D.C. (1910)
*MEYER, John R., 5-B Gibson Ter., Cambridge 38, Mass. (1952)
*MEYERDING, Charles E., Univ. of Minnesota, 127 Vincent Hall, Minneapolis 14, Minn. (1950)
MEYERS, Albert L., 6413 Oakridge Ave., Chevy Chase 15, Md. (1930)
MEYERS, Arthur C., Jr., 6337 Bancroft, St. Louis 9, Mo. (1947)
MEYERS, Cecil H., Univ. of Minnesota, Duluth Br., Dept. of Econ., Duluth, Minn. (1949)
MEYERS, Frederic, Univ. of Texas, Dept. of Econ., Austin 12, Tex. (1943)
MEYROWITZ, Alvin, 141 S. Cliffwood Ave., Los Angeles, Calif. (1940)
*MICHAEL, Walther P., 110 W. 81st St., New York 24, N.Y. (1951)
MICHALIK, Benjamin A., 193 Virginia Ave., Jersey City 5, N.J. (1947)
MICHELS, Rudolf K., 3 Dorchester Rd., Scarsdale, N.Y. (1929)
MICKEY, (Mrs.) Jean L., 129 N. Sheldon, Ames, Iowa. (1946)
MICOLEAU, Henri L., Gen. Motors Corp., 1775 Broadway, New York, N.Y. (1935)
MIDDENDORF, Harry S., 75 State St., Boston 9, Mass. (1946)
MIDDLETON, John J. I., Econ. Soc. of South Africa, P.O. Box 929, Pretoria, S. Africa. (1946)
MIELKE, Alton C., 3812 King's Way, Sacramento, Calif. (1951)
MIERNYK, William H., 28 Cambridge Rd., Norwood, Mass. (1946)
MIGHELL, Albert T., R.R. 1, Yorkville, Ill. (1925)
MIKESELL, Raymond F., 1563 Dairy Rd., Charlottesville, Va. (1936)
MIKI, Robert T., Univ. of Hawaii, Dept. of Econ., Honolulu 14, Hawaii. (1952)
MIKOLJON, Stanley J., 65 Rooney St., Clifton, N.J. (1933)
MILAM, Paul W., Univ. of Arkansas, Col. of Bus. Admin., Fayetteville, Ark. (1940)
MILES, H. Nathaniel, 4418 Wateka Dr., Dallas 9, Tex. (1949)
MILLARD, Mark, 42 Wall St., New York 5, N.Y. (1944)
MILLER, A. Edward, Time, Inc., 9 Rockefeller Plaza, New York 20, N.Y. (1946)
MILLER, Adolph C., 2230 S St., N.W., Washington, D.C. (1901)
MILLER, Agnes R. (Mrs. Francis F.), 5 Gracie Sq., New York 28, N.Y. (1948)
MILLER, Arjay R., Ford Motor Co., 3000 Schaefer Rd., Dearborn, Mich. (1942)
MILLER, Benjamin O., Virginia Poly. Inst., Blacksburg, Va. (1938)
MILLER, C. J., Univ. of Nebraska, Col. of Agric., Lincoln 1, Neb. (1950)
MILLER, Charles H., Jr., 104 Bobrich Dr., Rochester 10, N.Y. (1951)
MILLER, Charles W., 537 Lowe St., Appleton, Wis. (1950)
MILLER, Donald C., Fed. Res. Bd., Div. of Res. Washington 25, D.C. (1948)
MILLER, Earl J., 405 Hilgard Ave., Los Angeles, Calif. (1947)
MILLER, Ervin, Univ. of Pennsylvania, Wharton Sch. Fin. Dept., Philadelphia 4, Pa. (1946)
*MILLER, George T., 3245 Altamont Ave., Cleveland Heights 18, Ohio. (1952)
MILLER, Glenn W., Ohio State Univ., Dept. of Econ. Columbus 10, Ohio. (1936)
MILLER, Harlan B., 1748 S. Pennsylvania, Denver 10 Colo. (1949)
MILLER, (Mrs.) Helen H., Box 1757, Charlottesville Va. (1947)
*MILLER, Henry L., Jr., 6C Gibson Ter., Cambridge 38, Mass. (1952)
MILLER, Henry S., 14 Scott Dr., Huntington Station N.Y. (1936)
MILLER, Herman P., 603 Galveston St., S.E., Washington 20, D.C. (1947)
MILLER, John F., Nat. Plann. Asso., 1606 New Hampshire Ave., N.W., Washington 9, D.C. (1943)
MILLER, John L., Univ. of Wisconsin, 206 Ext. Bldg. Madison 6, Wis. (1939)
MILLER, John P., 73 Fernwood Rd., Hamden, Conn. (1936)
MILLER, John W., 264 Sheridan Rd., Winnetka, Ill. (1939)
MILLER, John W., 6356 Garesche Ave., St. Louis 20 Mo. (1947)
MILLER, Kenneth E., Armour & Co., Union Stock Yards, Chicago 9, Ill. (1949)
MILLER, Merton H., London Sch. of Econ., Houghton St., Adlwych, London, W.C. 2, England. (1945)
MILLER, Neil J., 3306 S. 7th St., Milwaukee, Wis. (1949)
MILLER, Paul L., 105 W. Mt. Ida Ave., Alexandria Va. (1924)
*MILLER, Reuben G., 401 E. Beckwith Ave., Missoula Mont. (1953)
MILLER, Seymour M., Brooklyn Col., Dept. of Econ. Brooklyn 10, N.Y. (1945)
MILLER, Sidney L., Univ. of Pittsburgh, Sch. of Bus. Admin., Pittsburgh 13, Pa. (1920)
MILLER, Sidney L., Jr., Univ. of Pennsylvania Wharton Sch., Philadelphia 4, Pa. (1945)
*MILLER, Stanley, 215½ N. Mills, Madison, Wis. (1952
MILLER, Stanley L., 67 Riverside Dr., New York 24 N.Y. (1939)
MILLER, Taulman A., Indiana Univ., Dept. of Econ. Bloomington, Ind. (1936)
MILLER, (Mrs.) Virginia B., 160 W. 77th St., Apt. 4A New York 24, N.Y. (1947)
MILLER, Wayne S., 4640 28th Rd., S., Apt. 4, Arlington 6, Va. (1950)
MILLER, William, Alfred A. Knopf, Inc., 501 Madison Ave., New York 24, N.Y. (1952)
MILLICAN, Richard D., Univ. of Illinois, 405 David Kinley Hall, Urbana, Ill. (1951)
MILLIGAN, Marshall E., Stanolind Oil & Gas Co. Tulsa, Okla. (1952)
MILLIKAN, Max F., 64 Highland St., Cambridge 38 Mass. (1937)
MILLIMAN, Jerome W., Florida State Univ., Dept of Econ., Tallahassee, Fla. (1949)
MILLS, A. L., Jr., Bd. of Gov. of the Fed. Res. System Washington 25, D.C. (1942)
MILLS, Frederick C., Columbia Univ., New York 27 N.Y. (1920)
MILLS, John A., 1115 Seward St., Evanston, Ill. (1941
MILLS, Joseph C., 122 Justice Bldg., Ottawa, Ont. Canada. (1951)
MILLS, Mark C., Indiana Univ., Dept. of Econ. Bloomington, Ind. (1923)
*MILLS, Paul A., 39 Plaza St., Brooklyn 17, N.Y. (1953)
MILNE, Matilda L., 2700 Wisconsin Ave., N.W., Washington 7, D.C. (1947)
MILROY, Robert R., Indiana Univ., Sch. of Bus. Bloomington, Ind. (1941)
MILSTEIN, David N., Stanford Univ., Dept. of Econ. Stanford, Calif. (1950)

MILSTEIN, Gladys, 154 Highland Ave., Westfield, Mass. (1949)
***MINCER, Jacob,** 100 Park Ter. W., New York 34, N.Y. (1952)
MINCIS, Albert S., 75 Martense St., Brooklyn 26, N.Y. (1947)
MINKOFF, Jack, Western Reserve Univ., Dept. of Bank. and Fin., Cleveland 6, Ohio. (1952)
***MINTON, Charles R.,** 569 Chipman, Lexington, Ky. (1953)
MINTS, LLoyd W., Univ. of Chicago, 1126 E. 59th St., Chicago 37, Ill. (1922)
MINTZ, Ilse, 3611 Henry Hudson Pkwy., New York 63, N.Y. (1948)
MINTZES, Joseph, 4211 N. Second Rd., Apt. 2, Arlington, Va. (1948)
MIRE, Joseph, Federation Bldg., Madison 1, Wis. (1943)
MIRSKI, Michael S., Apt. 126-C, West Point, N.Y. (1945)
MISES, Ludwig, 777 West End Ave., New York 25, N.Y. (1924)
MISEY, Leonard S., 1241 E. Burleigh St., Milwaukee 12, Wis. (1951)
MITCH, George F., P.O. Box 2358 Univ. Sta., Gainesville, Fla. (1926)
MITCHELL, (Mrs.) Agnes W., 1020 19th St., N.W., Apt. 920, Washington 6, D.C. (1934)
MITCHELL, Broadus, Rutgers Univ., New Brunswick, N.J. (1948)
MITCHELL, C. Clyde, Jr., Univ. of Nebraska, Col. of Agric., Lincoln, Neb. (1949)
MITCHELL, George S., 906 Lullwater Rd., N.E., Atlant, Ga. (1931)
MITCHELL, George W., 4717 Woodland Ave., Western Springs, Ill. (1930)
MITCHELL, Harry A., 2038 Pine St., New Orleans, La. (1933)
MITCHELL, Irving E., 453 Burg St., P.O.B. 402, Granville, Ohio. (1949)
MITCHELL, John M., Westover Rd., Stamford, Conn. (1943)
MITCHELL, Kathryn M. (Mrs. L. Clair), 114 Neulon Dr., Pittsburgh 16, Pa. (1951)
MITCHELL, Robert V., Univ. of Illinois, 313 David Kinley Hall, Urbana, Ill. (1949)
MITCHELL, Waldo F., 1508 N. 7th St., Terre Haute, Ind. (1920)
MITCHELL, Walter, Jr., Willowmere, Riverside, Conn. (1944)
MITCHELL, William N., 8159 S. Rhodes Ave., Chicago, Ill. (1946)
MLADEK, Jan V., 1818 H St., N.W., Washington 6, D.C. (1946)
MOAREFI, A., P.O. Box 755, Teheran, Iran. (1949)
MOCK, Fred L., 730 Briscoe Dr., Jeffersonville, Ind. (1950)
§**MODEL, Mark,** 117 Oakview Ave., Maplewood, N.J. (1943)
MODERN, Ernest, 12 Howland St., Cambridge, Mass. (1948)
MODIGLIANI, Franco, Carnegie Inst. of Tech., Sch. of Ind. Admin., Pittsburgh 13, Pa. (1942)
MODLIN, Carey P., Jr., Bur. of the Budget, Div. of Statis. Stand., Washington 25, D.C. (1947)
MODLIN, George M., University of Richmond, Va. (1940)
MOE, Albert F., 4729 N. Washington Blvd., Arlington 5, Va. (1950)
MOEDE, Herbert H., 7324 S. Oakley Ave., Chicago 36, Ill. (1948)
MOELLER, Charles, Jr., 19 Haggers Lane, Fair Haven, N.J. (1943)
MOELLER, Warren E., Georgia Inst. of Tech., Sch. of Ind. Mgt., Atlanta, Ga. (1950)
MOELLER, Wayne E., Univ. of Nebraska, Dept. of Econ., Lincoln, Neb. (1950)
MOFFAT, James E., 925 E. Hunter Ave., Bloomington, Ind. (1915)
MOGILNITSKY, Thecdosi A., Loyola Univ., 6525 Sheridan Rd., Chicago, Ill. (1935)
MOHR, G. Robert, Memphis State Col., Box 511, Memphis 11, Tenn. (1950)
***MOHRING, Herbert D.,** 1765 P St., N.W., Washington, D.C. (1952)
MOHRMAN, P. Christopher, 87-08 76th St., Woodhaven 21, N.Y. (1951)
MOÏSEEFF, Moïse, 64 Miraloma Dr., San Francisco 27, Calif. (1947)
MOLANO M., Alvaro, 5564 Delmar, St. Louis 12, Mo. (1946)
MOLL, Justus R., 1029 Vermont Ave., N.W., Room 803, Washington 5, D.C. (1947)
MOLONEY, John F., 19 S. Cleveland St., Memphis 4, Tenn. (1938)
***MONCAYO, René,** 133 Smalley Rd., University Heights, Syracuse 10, N.Y. (1952)
MONNETT, Albert A., Jr., U. S. Steel Corp., 525 William Penn Pl., Pittsburgh 30, Pa. (1949)
MONROE, Arthur E., 5 Concord Ave., Cambridge 38, Mass. (1915)
MONROE, Day, 2311 W. 17th St., Topeka, Kans. (1926)
MONTAGUE, Gilbert H., 152 E. 37th St., New York, N.Y. (1926)
MONTAVON, Paul A., Univ. of Notre Dame, Dept. of Econ., Notre Dame, Ind. (1949)
MONTEALEGRE, Jorge A., Int. Bank for Recon. and Dev., 1818 H St., N.W., Washington 25, D.C. (1951)
MONTEITH, Chalmers A., Ohio State Univ., Dept. of Econ., Columbus 10, Ohio. (1948)
MONTGOMERY, George, 2030 Thackrey St., Manhattan, Kans. (1948)
MONTGOMERY, Royal E., Cornell Univ., Dept. of Econ., Ithaca, N.Y. (1931)
MONTGOMERY, Sarah S., 240 Watchung Fork, Westfield, N.J. (1952)
MONTRIE, Charles J., 2500 Wisconsin Ave., Apt. 641, Washington 7, D.C. (1949)
MOONITZ, Maurice, 831 The Alameda, Berkeley 7, Calif. (1935)
MOOR, Roy E., 8 Prescott St., Cambridge 38, Mass. (1949)
MOORE, A. Milton, Canadian Tax Found., 4 Carlton St., Toronto, Ont., Canada. (1951)
MOORE, Charles W., Solebury Rd., New Hope, Pa. (1939)
***MOORE, Clarence A.,** 1211 E. 58th St., Chicago 37, Ill. (1952)
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MOORE, Edwin G., II, 515-B Westchester Apts., 4000 Cathedral Ave., Washington 16, D.C. (1951)
MOORE, Floyd W., Western State Teachers Col., Kalamazoo, Mich. (1927)
MOORE, Frederick T., Dept. of the Int., Bur. of Mines, Inter-Ind. Anal. Br., Washington 25, D.C. (1950)
MOORE, Geoffrey H., 153 Sandford Ave., North Plainfield, N.J. (1948)
MOORE, Henry L., Cornwall, N.Y. (1896)
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MOORE, Maurice E., 5815 Sheridan Rd., Chicago 40, Ill. (1950)
MOORE, O. Ernest, 33 Liberty St., New York 45, N.Y. (1944)
MOORE, William H., 1 Scott Circle, Washington, D.C. (1934)
MOORE, William J., Richmond, Ky. (1934)
MOOTS, Harold J., 2541 Mundale Ave., Dayton 10, Ohio. (1950)
***MORAVCIK, Ivo,** 36 Beach Ave., Woodmont, Conn. (1951)
***MORAWETZ, John H.,** 41-35 45th St., Sunnyside, L.I., N.Y. (1952)
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MOREY, Donald J., 587 Alva Pk., Eugene, Ore. (1950)
MOREY, Lloyd, Univ. of Illinois, Urbana, Ill. (1942)
MORGAN, Alfred D., 1058 Thomas Jefferson St., N.W., Washington 7, D.C. (1948)
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MORGENSTERN, Oskar, Princeton Univ., Dept. of Econ., Princeton, N.J. (1945)
MORGNER, Aurelius, Texas A. and M. Col., College Station, Tex. (1941)
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MORRIS, Frank E., 312 N. Thomas St., Arlington, Va. (1951)
MORRIS, James A., 4311 Sequoia Rd., Columbia 5, S.C. (1947)
MORRIS, James R., 7633 S. Phillips Ave., Chicago 49, Ill. (1952)
MORRIS, Ruby T., Connecticut Col., New London, Conn. (1949)
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MORRIS, Victor P., Univ. of Oregon, Col. of Soc. Sci., Eugene, Ore. (1926)
MORRISON, Jay, Rainier Club, 4th Ave. at Marion St., Seattle 4, Wash. (1935)
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MORRISSEY, Frederic P., Univ. of California, Sch. of Bus. Admin., Berkeley 4, Calif. (1947)
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MORS, Wallace P., Western Reserve Univ., 314 Superior Ave., Cleveland 14, Ohio. (1940)
MORSE, Chandler, Cornell Univ., Dept. of Econ., Ithaca, N.Y. (1947)
MORSE, Herbert C., 333 S. Kensington, La Grange, Ill. (1940)
MORSE, Richard L., Florida State Univ., Tallahassee, Fla. (1941)
MORTARA, Giorgio, c/o I.B.G.E., Ave. Roosevelt 166, Rio de Janeiro, Brazil. (1941)
MORTENSEN, Erik H., F.A.O., Viale Terme di Caracalla; Qu 8–47, Rome, Italy. (1949)
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MOSHER, Norman W., 2121 Virginia Ave., N.W., Apt. A-111, Washington 7, D.C. (1948)
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MUI, Kan C., Oklahoma City Univ., Dept. of Econ., Oklahoma City, Okla. (1945)
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MUNTZ, Earl E., 22 Gap View Rd., Short Hills, N.J. (1923)
MURAD, Anatol, Box 284, Hamilton Rd., R. 3, New Brunswick, N.J. (1941)
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MURDOCK, John C., Univ. of Missouri, Sch. of Bus. and Pub. Admin., Dept. of Econ., Columbia, Mo. (1948)
MURIEL, Sister, St. Francis Col., Joliet, Ill. (1950)
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MURPHY, Austin S., 47 Woodcrest Dr., Livingston, N.J. (1946)
***MURPHY, Duncan W.**, R. 2, Cottage Grove, Wis. (1953)
MURPHY, Elenor G. (Mrs. Henry C.), MSA/E, Embassy, Paris, c/o State Dept., Washington 25, D.C. (1938)
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MUSGRAVE, Richard A., Univ. of Michigan, Dept. of Econ., Ann Arbor, Mich. (1937)
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MYERS, A. Howard, Univ. of Michigan, 308 Bus. Admin., Ann Arbor, Mich. (1931)
MYERS, Barney E., 778 E. Market St., Akron, Ohio. (1949)
MYERS, Charles A., M.I.T., Ind. Rela. Sec., Cambridge, Mass. (1936)
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MYERS, Robert J., MS Spec. Mission to France, American Embassy, Paris, France. (1934)
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MYLES, J. C., 728 N. Bever St., Wooster, Ohio. (1949)
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NAGEL, August W., Red Gate Farm, Avery Rd., Rockville, Md. (1944)
NAHL, Perham C., 2014 Lincoln St., Evanston, Ill. (1936)
NAIDEL, Simon, 2000 F St., N.W., Washington 6, D.C. (1941)
NAITO, William S., 1138½ E. 61st St., Chicago 37, Ill. (1950)
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NASH, Sister M. Eleanor, Fontbonne Col., St. Louis 5, Mo. (1947)
NATARAJAN, B., Econ. Adviser to Gov. of Madras, Fort St. George, Madras, India. (1950)
NATHAN, Otto, 55 E. 10th St., New York 3, N.Y. (1931)
NATHAN, Robert R., Robert R. Nathan Associates, Inc., 3 Thomas Circle, Washington 9, D.C. (1937)
NAVARRETE, Alfredo, Jr., Int. Monetary Fund, Washington 25, D.C. (1950)
NAYLOR, R. W., 1751 Lawrence Ave., Detroit 6, Mich. (1947)
NEAL, Alfred C., 16 Chiltern Rd., Weston, Mass. (1941)
NEALE, Walter C., Pratsham Holmbury St. Mary, Dorking, Surrey, England. (1948)
NEF, John U., Univ. of Chicago, Chicago 37, Ill. (1929)
NEFF, Frank A., 1625 N. Vassar, Wichita 6, Kans. (1935)
NEFF, Philip, Univ. of California, 405 Hilgard Ave., Los Angeles 24, Calif. (1943)
NEIFELD, Morris R., 15 Washington St., Newark, N.J. (1924)
NEISSER, Hans P., 128 Bellmore St., Floral Park, L.I., N.Y. (1933)
NEISWANGER, William A., Jr., Univ. of Illinois, Col. of Com., Dept. of Econ., Urbana, Ill. (1924)
NELSON, Benjamin N., 395 Riverside Dr., New York 25, N.Y. (1946)
NELSON, Boyd L., 8-L Southway Rd., Greenbelt, Md. (1949)
NELSON, Carl L., Univ. of Minnesota, Sch. of Bus. Admin., Minneapolis 14, Minn. (1934)
NELSON, Eastin, Univ. of Texas, Austin 12, Tex. (1949)
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NELSON, Edward G., 615 Tennessee St., Lawrence, Kans. (1938)
NELSON, Emil L., 101 Wayne Pl., S.E., Washington, D.C. (1950)
NELSON, Esther E., Hudson View Gardens, J55, 183rd and Pinehurst Ave., New York 33, N.Y. (1943)
NELSON, George J., 12 E. 93rd St., New York 28, N.Y. (1943)
NELSON, James C., Washington State Col., Dept. of Econ., Pullman, Wash. (1936)
NELSON, James R., 23 Orchard St., Amherst, Mass. (1947)
**NELSON, Myrtle G. (Mrs. Roger S.), 6302 W. Halbert Rd., Bethesda 14, Md. (1947)
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NELSON, Ralph, 24 Meritoria Dr., East Williston, N.Y. (1950)
NELSON, Richard W., 324 Mansion Dr., Alexandria, Va. (1922)
NELSON, Robert A., 26 Savin Ave., Norwood, Mass. (1949)
NELSON, Roger S., 6302 W. Halbert Rd., Bethesda 14, Md. (1945)
NELSON, Saul, 9119 Sligo Pkwy., Silver Spring, Md. (1950)
NELSON, Stewart, Doane Col., Crete, Neb. (1950)
NEMETHY, Anthony A., Sunhouse, Dover, Mass. (1951)
NEMMERS, Erwin E., 2936 N. Hackett Ave., Milwaukee 11, Wis. (1952)
NERLOVE, Samuel H., Univ. of Chicago, Sch. of Bus., Chicago 37, Ill. (1923)
NESS, Norman T., Anderson, Clayton & Co., P.O. Box 2538, Houston 1, Tex. (1949)
NESSLEIN, Floyd F., 208 State St., Alton, Ill. (1948)
NETER, John, Syracuse Univ., Col. of Bus. Admin., Syracuse 10, N.Y. (1948)
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NETSCHERT, Bruce C., 1017 Wakefield Dr., Alexandria, Va. (1949)
NETZER, D., Fed. Res. Bank, Chicago 90, Ill. (1949)
NEUHOFF, Ralph R., 414 Rialto Bldg., 220 N. Fourth St., St. Louis 2, Mo. (1944)
NEUMANN, Bruno R., 100 Garfield Ave., New London, Conn. (1945)
NEUMARK, F., Finanzwissenschaftliches Seminar der Universitaet, Mertonstr. 17, Frankfurt/Main, Germany. (1948)
NEUMER, Edward J., Jr., Univ. of Southern California, Dept. of Econ., Los Angeles, Calif. (1948)
NEUSTADT, Richard E., Exec. Office of the Pres., Bur. of the Budget, Washington 25, D.C. (1945)
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NEVIN, Jerome R., 150 W. Euclid Ave., Detroit 2, Mich. (1947)
NEWARK, Christine, Ohio State Univ., Sch. of Home Econ., Columbus 10, Ohio. (1945)
NEWBURY, Frank D., 577 Briar Cliff Rd., Pittsburgh 21, Pa. (1945)
NEWCOMER, Hale L., Univ. of Illinois, 116 David Kinley Hall, Urbana, Ill. (1948)
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NICHOLLS, William D., 126 University Ave., Lexington, Ky. (1929)
NICHOLLS, William H., Vanderbilt Univ., Dept. of Econ. and Bus. Admin., Nashville 4, Tenn. (1942)
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NICHOLS, John R., 57 E. Northwood Ave., Columbus 1, Ohio. (1945)
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NICOLS, Alfred, Univ. of California, Dept. of Bus. Admin., Los Angeles 24, Calif. (1943)
**NIEBYL, Elizabeth C. H. (Mrs. Karl H.), Stony Sides, Westport, Essex Co., N.Y. (1946)
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NIEHAUS, Fred R., Univ. of Colorado, Sch. of Bus., Boulder, Colo. (1935)
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O'BEIRNE, Bert E., Michigan State Col., Dept. of Econ., East Lansing, Mich. (1942)
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OBERG, R. Winston, Standard Oil Development Co., Employee Rela. Dept., Linden, N.J. (1949)
O'BRIEN, Maurice E., 1304 Forest Ave., Evanston, Ill. (1946)
OBRIST, M.A., 34-33 90th St., Apt. F31, Jackson Heights, N.Y. (1947)
OBST, Maxwell, MSA, 2 rue St. Florentin, Paris 1, France. (1952)

*OCKELMANN, Howard H., 3715 Baring St., Philadelphia 4, Pa. (1952)
OCKERLANDER, Jack N., 611 Montana Ave., Apt. C, Santa Monica, Calif. (1950)
O'CONNELL, Donald W., 606 W. 116th St., Apt. 84, New York, N.Y. (1940)
*O'CONNOR, Hernando A., 32-63 33rd St., Long Island City 6, N.Y. (1950)
O'CONNOR, John J., 254 Seaman Ave., New York 34, N.Y. (1946)
O'CONNOR, Leonard A., 29 Elizabeth St., Springfield 9, Mass. (1951)
O'CONNOR, Michael, 1961 Selby Ave., Los Angeles 25, Calif. (1934)
¶O'CONNOR, Mildred C., 687 Washington St., Brighton 35, Mass. (1950)
ODERKIRK, Alvan D., Babson Farms, Inc., De Kalb, Ill. (1941)
OFF, Charles, 60 Overhill Rd., Milford, Conn. (1949)
*OFRIA, John F., 115 Grasmere St., Newton 58, Mass. (1952)
O'GERAN, Graeme, Syracuse Univ., 308 Maxwell Hall, Syracuse 10, N.Y. (1949)
OGG, Wallace E., Iowa State Col. of Agric., Co-op. Ext. Work in Agric. and Home Econ., Ames, Iowa. (1948)
OGLE, George C., Haskell Hall, Tahlequah, Okla. (1948)
O'GRADY, John, 1345 Connecticut Ave., N.W., Washington 6, D.C. (1953)
OGRAM, Ernest W., Jr., 6306 32nd St., N.W., Washington 15, D.C. (1951)
O'HARA, Jay L., 614 W. Market St., Akron 3, Ohio. (1948)
‡OHLIN, Bertil, Stockholm Commercial Col., Stockholm, Sweden. (1947)
OHSOL, Johann G., 1815 Riverside Dr., New York, N.Y. (1913)
OKUDA, Kenji, 1307 14th Ave. S., Seattle, Wash. (1947)
OKUN, Arthur M., 150 Pendleton St., New Haven, Conn. (1951)
OKUN, Julius L., 5940 14th St., N.W., Washington 11, D.C. (1946)
O'LEARY, Edmund B., Univ. of Dayton, Dayton, Ohio. (1941)
O'LEARY, James J., Life Ins. Asso. of Amer., 488 Madison Ave., New York 22, N.Y. (1941)
O'LEARY, Paul M., Cornell Univ., McGraw Hall, Ithaca, N.Y. (1929)
OLEJARCZYK, Kazimierz, 7315 Emanon, Dearborn, Mich. (1948)
OLIVER, David R., Beverly Rd. and Marter Ave., R.F.D. 1, Burlington, N.J. (1953)
OLIVER, E. L., 5631 Potomac Ave., N.W., Washington, D.C. (1928)
OLIVER, Henry M., Jr., Indiana Univ., Econ. Dept., Bloomington, Ind. (1938)
¶OLIVER, Robert W., Univ. of Southern California, Dept. of Econ., Los Angeles 7, Calif. (1948)
OLKEN, Samuel C., 195 Broadway, Room 1212, New York 7, N.Y. (1948)
OLM, Kenneth W., Texas Western Col., Box 94, El Paso, Tex. (1947)
OLSEN, Arden B., Univ. of Denver, Col. of Bus. Admin., 211 15th St., Denver 2, Colo. (1946)
OLSEN, Bernard M., 809 E. Hunter St., Bloomington, Ind. (1949)
OLSEN, Herluf V., Dartmouth Col., Tuck Sch., Hanover, N.H. (1924)
OLSEN, Paul C., Philadelphia Col. of Pharm. and Sci., 43rd St. and Kingsessing Ave., Philadelphia 4, Pa. (1951)
OLSEN, Ronald R., 1313 W. Dayton St., Madison, Wis. (1952)
OLSON, Albert L., 716 W. Armstrong Ave., Peoria, Ill. (1937)
OLSON, Ernest C., Bd. of Gov. of the Fed. Res. System, Washington 25, D.C. (1948)
OLSON, Iver M., 169 Birch St., Park Forest, Ill. (1951)
OLSON, Oscar A., McPherson Col., McPherson, Kans. (1940)
OLSON, Paul R., Univ. of Iowa, Iowa City, Iowa. (1945)
O'MAHONY, Joseph E., 4201 Massachusetts Ave., N.W., Apt. 3086-W, Washington 16, D.C. (1949)
OMOHUNDRO, Edgar H., 4011 N. 11th St., Arlington, Va. (1940)
ONDRECHEN, John P., 420 Hamilton St., Allentown, Pa. (1949)
O'NEILL, Harold J., 3402-C E. Smith Ave., Albuquerque, N.M. (1951)
O'NEILL, Harry J., St. Louis Univ., Sch. of Com. and Fin., St. Louis, Mo. (1923)
*O'NEILL, John J., Jr., 10419 Hebard St., Kensington, Md. (1951)
ONO, Mitsuo, Control Office, Japan Cent. Esch., APO 503, c/o Postmaster, San Francisco, Calif. (1952)
*OORT, Coen J., 1414 E. 59th St., Chicago 37, Ill. (1952)
OPIE, Redvers, 722 Jackson Pl., N.W., Washington 6, D.C. (1926)
OPPITZ, Robert J., Northwestern Univ., Sch. of Com., Fin. Dept., Evanston, Ill. (1949)
ORCUTT, Guy H., Harvard Univ., Dept. of Econ., Cambridge 38, Mass. (1950)
ORDEN, (Mrs.) Susan R., 1120 N. 66th St., Apt. 7, Philadelphia 31, Pa. (1943)
ORLOFSKY, Abraham, 500 E. 80th St., New York 21, N.Y. (1948)
ORMSBY, Andrew S., Clarkson Col., Potsdam, N.Y. (1949)
ORNATI, Oscar, 325 W. Seneca St., Ithaca, N.Y. (1949)
O'ROURKE, George E., Jr., 4430 Garrison St., N.W., Washington, D. C. (1953)
ORR, Earle W., Jr., 6011 33rd St., N.W., Washington 15, D.C. (1952)
ORTH, Andrew P., Cedarville Col., Dept. of Soc. Sci. and Bus., Cedarville, Ohio. (1947)
*ORTNER, Robert C., 400 Highland Ter., Orange, N.J. (1952)
OSBORN, Richards C., Univ. of Illinois, 311 David Kinley Hall, Urbana, Ill. (1946)
OSBORNE, Ernest L., Chancery Apts., Washington 16, D.C. (1934)
*OSBORNE, Raymond L., 4236 S. 35th St., Arlington, Va. (1952)
*OSBORNE, Robert T., R.D. 7, Box 141, Greensburg, Pa. (1952)
OSER, Jacob, Harpur Col., State Univ. of New York, Endicott, N.Y. (1949)
OSGOOD, Roy C., 1558 First Nat. Bank Bldg., 38 S. Dearborn St., Chicago 3, Ill. (1904)
O'SHEA, Vincent J., 260 Arleigh Rd., Douglas Manor, L.I., N.Y. (1932)
OSIAS, Max S., 2707 Blaine Dr., Chevy Chase 15, Md. (1940)
OSTER, Clinton V., Ohio State Univ., Dept. of Econ., Columbus 10, Ohio. (1947)
OSTERBIND, Carter C., 2105 N.W. 7th Lane, Gainesville, Fla. (1946)
OSTERMAN, Lewis N., Jr., 516 Duval Manor, Johnson and Greene Sts., Philadelphia 44, Pa. (1949)
OSTHEIMER, Richard H., 33 Lawrence Dr., White Plains, N.Y. (1947)
OSTLUND, Harry J., Univ. of Minnesota, Sch. of Bus., Minneapolis, Minn. (1920)
OSTRANDER, F. Taylor, Jr., MSA/Europe (Paris), Dept. of State, Washington 25, D.C. (1943)
OTA, Tetsuo, 4652 S. Woodlawn Ave., Chicago 15, Ill. (1950)
OTIS, Delos S., 8417 Flower Ave., Takoma Park, Md. (1947)
*OTIS, Theo N., 5442 S. Harper, Chicago 15, Ill. (1950)
O'TOOLE, Austin F., 152 Lincoln Ave., Ridgewood, N.J. (1950)
OTTESON, Schuyler F., Indiana Univ., Sch. of Bus., Bloomington, Ind. (1945)
OTTO, Erich A., Rutgers Univ., Sch. of Bus. Admin., Newark 2, N.J. (1931)
OTTO, Ingolf H. E., Univ. of Kansas City, Kansas City 4, Mo. (1949)
*OVERBY, Gordon L., c/o Esther Cresap, 2700 4th Ave., Apt. 65, Seattle, Wash. (1952)
OVERLEY, Elnora M., London Logistics Group, c/o Mil. Attache, U.S. Navy 100, FPO, c/o Postmaster, New York, N.Y. (1950)
OVERMILLER, Charles S., Louisiana State Univ., Col. of Com., Baton Rouge, La. (1947)
OVERTON, R. C., Northwestern Univ., Sch. of Com., Evanston, Ill. (1946)
OWEN, E. Lyle, Univ. of Tulsa, Tulsa 4, Okla. (1942)
OWEN, John P., Univ. of Houston, Sch. of Bus. Admin., 3801 St. Bernard St., Houston 4, Tex. (1946)
OWEN, William V., Purdue Univ., Dept. of Hist., Econ., and Gov., Lafayette, Ind. (1939)

OWENS, Richard N., 3113 Key Blvd., Arlington 1, Va. (1923)
OXENFELDT, Alfred R., 565 Holt St., West Hempstead, L.I., N.Y. (1946)
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PABST, William R., Jr., 3420 Quebec St., N.W., Washington 16, D.C. (1932)
PACE, Lawrence, "St. Maggie," Simpson St., Marsa, Malta. (1946)
PACKARD, Howard M., 1144 Main St., Racine, Wis. (1944)
PACKARD, Richard M., 205 Grove St., Auburndale 66, Mass. (1936)
PACKER, Stephen B., 1386 Union St., Brooklyn 13, N.Y. (1951)
PADEN, Don W., Univ. of Illinois, Dept. of Com., Urbana, Ill. (1943)
PAGANI, John, Jr., Univ. of Utah, Col. of Bus. Admin., Salt Lake City 1, Utah. (1939)
PAIGE, Anna D. (Mrs. Harold W.), 109 Woodley Pl., Falls Church, Va. (1942)
PALAZZO, José Truda, Banco do Brasil, Fiscalizacao Bancaria, Porto Alegre, Est. do Rio Grande do Sul, Brazil. (1951)
PALIOKAS, Balys, 6922 S. Rockwell St., Chicago 29, Ill. (1948)
PALLEY, Adele, 2056 Davidson Ave., New York 53, N.Y. (1949)
PALMER, Donald K., 1411 Kanawha St., Apt. 202, Hyattsville, Md. (1951)
PALMER, Dwight L., 3511 W. 6th St., Los Angeles 5, Calif. (1940)
PALMER, Edgar Z., 302 S. 28th St., Lincoln, Neb. (1927)
PALMER, Gladys L., Univ. of Pennsylvania, 3440 Walnut St., Philadelphia 4, Pa. (1920)
PALMER, Jesse T., R. 3, Herndon, Va. (1953)
PALMER, Peter F., 111½ S. Friends, Whittier, Calif. (1948)
PALMER, Walter S., Jr., 201 State St., Reno, Nev. (1934)
PALMER, William B., Univ. of Michigan, Dept. of Econ., Ann Arbor, Mich. (1934)
PALYI, Melchior, 211 W. Wacker Dr., Chicago, Ill. (1927)
PANCOAST, Elinor, Goucher Col., Baltimore 4, Md. (1923)
PANCOAST, Omar, Jr., 414 Cummings Lane, Chevy Chase, Md. (1941)
*PANDHARPURKAR, Manohar Narayan, Univ. of Oregon, Dept. of Econ., Eugene, Ore. (1953)
PAPANDREOU, Andreas G., Univ. of Minnesota, Sch. of Bus. Admin., Minneapolis 14, Minn. (1947)
PAPANEK, Gustav F., Dept. of State, Tech. Co-op. Admin., McShain Bldg., 333 C St., N.W., Washington, D.C. (1952)
PAPIER, William, 1023 S. Remington Rd., Columbus 9, Ohio. (1940)
PARADISE, Filmer M., 5530 Warwick Pl., Chevy Chase 15, Md. (1946)
PARCELLS, Winifred S. (Mrs. Charles H.), 3642 Lake Shore Dr., Apt. 4E, Chicago 13, Ill. (1944)
PAREDES, Miguel, Alcala, 185, Madrid, Spain. (1949)
PARIS, James D., 83 Old Pond Rd., Great Neck, N.Y. (1935)
PARISH, William J., 1700 Sigma Chi Rd., Albuquerque, N.M. (1948)
PARK, Colin, 36 Arondale Rd., Williamsville 21, N.Y. (1951)
*PARK, Harry R., 423 Kirk Pl., San Antonio, Tex. (1953)
PARK, Stephen A., 4951 N. Lake Dr., Milwaukee 11, Wis. (1949)
PARKANY, John, Loyola Univ., Dept. of Econ., 820 N. Michigan Ave., Chicago 11, Ill. (1949)
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PARKER, David G., 4125 W. 214th St., Fairview Park 26, Ohio. (1948)
PARKER, James S., 107 Kent Rd., Glen Burnie, Md. (1936)
*PARKER, Russell C., 1120 Perkins, Richland, Wash. (1952)
PARKER, William C., 4 W. 43rd St., New York, N.Y. (1949)
PARKER, William N., Williams Col., Stetson Rd., Ap 1, Williamstown, Mass. (1949)
PARMELEE, Julius H., Transportation Bldg., Washington 6, D.C. (1917)
PARMELEE, Rexford C., 4700 47th St., N.W., Washington, D.C. (1931)
PARNES, Herbert S., Ohio State Univ., Econ. Dep Columbus 10, Ohio. (1948)
PARRISH, John B., Univ. of Illinois, Col. of Con Dept. of Econ., Urbana, Ill. (1944)
PARROTT, D'Arcy, 65 Broadway, New York 6, N.Y. (1940)
PARRY, Carl E., 4000 Cathedral Ave., N.W., Washington 16, D.C. (1910)
PARSON, Daniel, 25 Monroe Pl., Brooklyn 2, N.Y. (1948)
PARSONS, Charles G., 2137 Niskayuna Dr., Schenectady 9, N.Y. (1947)
PARSONS, Edgar A., 614 Blair Rd., Falls Church Va. (1948)
PARSONS, Kenneth H., Univ. of Wisconsin, 304 Agr Hall, Madison, Wis. (1937)
PARSONS, Melvin G., Jr., 1301 Sunset Dr., Rantoul Ill. (1952)
PARSONS, O. A., 328 Grand Ave., Billings, Mon (1939)
PARTEE, John C., 215 S. Leitch Ave., La Grange, I (1952)
PARTNER, James W., Bldg. C 1, Apt. 7, 95 N. Broadway, White Plains, N.Y. (1946)
PASCHAL, Elizabeth, 395 S. Los Robles, Pasadena Calif. (1934)
PASEL, Lawrence, Monmouth Col., Monmouth, I (1924)
PASHEK, Robert D., Univ. of Illinois, 215A Dav Kinley Hall, Urbana, Ill. (1951)
PASSER, Harold C., 48 Lilac Dr., Rochester 20, N.Y. (1948)
PASTER, Irving, 19303 Monte Vista Ave., Detroit 2 Mich. (1946)
PATCHIN, Sydney A., Hibbing Junior Col., Hibbin Minn. (1948)
PATERSON, Robert W., 1800 Jefferson Park Av Charlottesville, Va. (1952)
PATINKIN, Don, Hebrew Univ., Dept. of Eco Jerusalem, Israel. (1946)
PATON, William A., 2203 Hill St., Ann Arbor, Mic (1917)
PATON, William A., Jr., 2203 Hill St., Ann Arb Mich. (1952)
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PATTERSON, Gardner, Princeton Univ., Dept. Econ. and Soc. Inst., Princeton, N.J. (1948)
PATTERSON, R. F., Univ. of South Dakota, Sch. Bus., Vermillion, S.D. (1946)
PATTERSON, Robert T., 1923 38th St., N.W., Washington 7, D.C. (1947)
PATTERSON, S. Howard, Univ. of Pennsylvan Logan Hall, Philadelphia, Pa. (1921)
§PATTON, Audley E., 72 W. Adams St., Chicago, I (1945)
PATTON, Francis L., 2051 Iuka Ave., Columbus Ohio. (1920)
PATTON, Marguerite (Mrs. Harald S.), Weste Michigan Col. of Educa., Kalamazoo 45, Mich. (194
PATTON, Robert D., Ohio State Univ., Columbus 1 Ohio. (1927)
PAUL, Allen B., Brookings Inst., 722 Jackson P Washington 6, D.C. (1942)
PAUSTIAN, Paul W., P.O. Box 1466, University, Al (1947)
PAWLEY, Francis R., 3468 Gunston Rd., Alexandri Va. (1943)
PAWLEY, Walter H., Niccolo Piccinni 19, Interno 1 Rome, Italy. (1948)
PAXTON, Melvin C., 2695 Melbourne St., Salt La City, Utah. (1951)
PAYNE, Arvella, Central State Col., Wilberforce, Ohi (1948)
PAYNE, James P., Jr., Louisiana State Univ., Col. Com., Baton Rouge 3, La. (1950)
PAYNE, John B., Mercantile Trust Co., 721 Locu St., St. Louis 1, Mo. (1949)
PAYNE, Wilson F., Babson Park 57, Mass. (1947)

PAZEMECKAS, Joseph P., 97-27 77th St., Ozone Park 17, N.Y. (1952)
PAZOS, Felipe, Int. Monetary Fund, 1818 H St., N.W., Room 520A, Washington, D.C. (1946)
PEACH, William N., Univ. of Oklahoma, Bur. of Bus. Res., Norman, Okla. (1942)
PEARCE, C. A., 225 Seaman Ave., Rockville Centre, N.Y. (1933)
PEARCE, John J., Jr., Rutgers Univ., Inst. of Mgt. and Labor Rela., New Brunswick, N.J. (1948)
PEARLSON, Jeanne S., 152 7th Ave., S., New York 14, N.Y. (1949)
PEARSE, Robert F., 18512 Fitzpatrick Ct., Detroit 28, Mich. (1948)
PEARSON, David C., 2610 Las Lunas St., Pasadena 8, Calif. (1941)
PEARSON, Harry W., 35 Prospect Ave., Port Washington, L.I., N.Y. (1951)
PEARSON, O. P., Auto. Mfrs. Asso., New Center Bldg., Detroit, Mich. (1940)
PECHMAN, Joseph, Treas. Dept., Tax Advisory Staff, Washington, D.C. (1942)
PECK, Gustav, 2319 Nebraska Ave., N.W., Washington 16, D.C. (1932)
PECK, Harvey W., R.D. 2, Moravia, N.Y. (1922)
PECK, Henry A., Univ. of Maine, Dept. of Econ., Orono, Me. (1951)
***PECK, Merton J.,** 18 Shaler Lane, Cambridge, Mass. (1951)
****PEEL, Evelyn O. (Mrs. Fred W.),** 311 Martha's Rd., Alexandria, Va. (1949)
PEEL, Fred W., 311 Martha's Rd., Alexandria, Va. (1949)
PEGRUM, Dudley F., Univ. of California, Los Angeles, Calif. (1928)
PEISCH, Archibald M., Norwich, Vt. (1919)
PELZ, Edward J., 1261 Madison Ave., New York 28, N.Y. (1938)
PENDLETON, Edwin C., Univ. of Hawaii, Dept. of Econ., Honolulu 14, Hawaii. (1952)
PENDLETON, William, 1109 S.W. 3rd Ave., Gainesville, Fla. (1948)
PENROSE, Edith, Johns Hopkins Univ., Dept. of Polit. Econ., Baltimore 18, Md. (1950)
PERAGALLO, Edward, Col. of the Holy Cross, Worcester 3, Mass. (1945)
PERCEFULL, Sabin C., Northwestern State Col., Alva, Okla. (1921)
PERCUS, Philip M., 565 Fifth Ave., New York, N.Y. (1942)
PERDOMO, Nicasio, Casilla 9815, Santiago, Chile. (1951)
***PERET, J. Cortland G.,** 57 Dorothy Rd., Arlington 74, Mass. (1949)
****PERINE, Eleanor R. (Mrs. Fred A.),** 1435 Edison Ave., Detroit 6, Mich. (1945)
PERINE, Fred A., 1435 Edison Ave., Detroit 6, Mich. (1943)
PERLES, Benjamin M., 38 Everett St., Newton Center 59, Mass. (1951)
PERLMAN, Irving, 1854 68th St., Brooklyn 4, N.Y. (1947)
PERLMAN, Mark, Cornell Univ., New York Sch. of Ind. and Labor Rela., Ithaca, N.Y. (1947)
PERLMAN, Richard W., 29 Winchester Ave., Yonkers 2, N.Y. (1948)
PERLMAN, Selig, 1805 Rowley Ave., Madison, Wis. (1915)
PERLOFF, Harvey S., Univ. of Chicago, 205 Soc. Sci. Bldg., Chicago 37, Ill. (1947)
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PERRING, Katherine, Bay State Apts. 211, 1701 Massachusetts Ave., N.W., Washington 6, D.C. (1942)
PERRONE, Patrick D., Loyola Univ., W. 80th St. and Loyola Blvd., Los Angeles 45, Calif. (1949)
PERRY, G. Neil, Int. Monetary Fund, 1818 H St., N.W., Washington 25, D.C. (1940)
PERRY, Louis B., Pomona Col., Claremont, Calif. (1947)
PERRY, Robert H., 1019 Waverley, Palo Alto, Calif. (1941)
PERRY, Vincent A., 851 Blvd. E, Weehawken, N.J. (1948)
PERSON, Harlow S., Southlawn Ave., Dobbs Ferry, N.Y. (1901)
PERSONS, Charles E., 4519 Carlin Springs Rd., Arlington, Va. (1910)
PERSONS, Robert H., Jr., 196-10 Pompeii Ave., Hollis 23, N.Y. (1946)
PESCUMA, Miguel, Ave. Belgrano 2484, Buenos Aires, Argentina. (1944)
PETER, Hollis W., c/o American Embassy, Beirut, Lebanon. (1951)
PETERS, Francis M., Jr., USS Amphion (Ar-13), c/o FPO, New York, N.Y. (1952)
PETERS, (Mrs.) Iva L., Main and Fair Sts., Cold Spring, Putnam Co., N.Y. (1922)
***PETERS, Kenneth W.,** 145 Whitfield St., Dorchester 24, Mass. (1952)
PETERSON, (Mrs.) Florence B., 687 Lincoln Ave., Winnetka, Ill. (1928)
PETERSON, G. Shorey, Univ. of Michigan, Dept. of Econ., Ann Arbor, Mich. (1924)
PETERSON, J. Marvin, 3740 48th Ave., S., Minneapolis, Minn. (1932)
PETERSON, John M., 5416 E. 55th Pl., East Riverdale, Md. (1947)
PETERSON, Keene P., Univ. of Washington, Dept. of Econ., Seattle 5, Wash. (1949)
****PETERSON, Mary B. (Mrs. W. H.),** 77 Old Hollow Rd., Short Hills, N.J. (1953)
PETERSON, (Mrs.) Mary S., 304 Princeton Ave., Madison, Wis. (1920)
PETERSON, Rudolph, 129 S. 13th St., Lewisburg, Pa. (1925)
PETERSON, Virginia K., 1609 Spruce St., Berkeley 9, Calif. (1947)
PETERSON, W. H., 77 Old Hollow Rd., Short Hills, N.J. (1950)
PETERSON, Wallace C., 2920 N. 56th St., Lincoln 4, Neb. (1953)
PETERY, Stephen J., 198 Mt. Vernon St., Dedham, Mass. (1951)
PETRAS, George S., 2108 Key Blvd., Apt. 961, Arlington, Va. (1946)
PETRUZELLI, Nicholas M., 11522 Maple Ridge Rd., Silver Spring, Md. (1952)
PETSHEK, Kirk R., 3870 9th St., S.E., Washington 20, D.C. (1946)
PETTEE, E. W., North Dakota Agric. Col., State Col. Sta., Fargo, N.D. (1944)
PETTEE, James C., 4971 34th Rd., N., Arlington 7, Va. (1936)
PETTENGILL, Robert B., 1811 E. Foothill, Altadena, Calif. (1934)
PETTIBONE, Winton, 25 El Camino Real, Berkeley 5, Calif. (1947)
PETTINGILL, Stuart A., 8403 Tahona Dr., Silver Spring, Md. (1948)
PFAU, Francis X., 139 Bellevue St., West Roxbury 32, Mass. (1950)
PFEFFER, Irving, 5745 Charles St., Philadelphia 24, Pa. (1948)
PFOUTS, Ralph W., Univ. of North Carolina, Dept. of Econ., Chapel Hill, N.C. (1949)
PFUNTNER, Carl H., 2804 Terrace Rd., S.E., Apt. A-544, Washington 20, D.C. (1948)
PHALAN, J. Laurence, 14 Ivy Rd., Medford, Mass. (1947)
PHARISS, John W., 3800 Porter St., N.W., Washington 16, D.C. (1948)
PHEIFFER, Julius E., 219 S. Michigan, Saginaw, Mich. (1948)
PHELAN, Towner, St. Louis Union Trust Co., 323 N. Broadway, St. Louis 2, Mo. (1946)
PHELPS, Clyde W., Univ. of Southern California, Dept. of Econ., Los Angeles 7, Calif. (1927)
PHELPS, Dudley M., 1601 Morton Ave., Ann Arbor, Mich. (1939)
PHELPS, Orme W., Claremont Men's Col., Claremont, Calif. (1945)
PHILBROOK, Clarence, Univ. of North Carolina, Sch. of Bus. Admin., Chapel Hill, N.C. (1946)
PHILIPS, George E., Aquinas Col., Grand Rapids, Mich. (1952)
PHILLIPS, Almarin, Univ. of Pennsylvania, Logan Hall, Philadelphia 4, Pa. (1949)
PHILLIPS, Charles W. E., 87-22 118th St., Richmond Hill 13, N.Y. (1949)
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PHILLIPS, Jackson R. E., 5552 Netherland Ave., Apt. 1A. Riverdale 71, N.Y. (1949)
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PHILLIPS, Merton O., Washington and Lee Univ., Lexington, Va. (1927)
PHILLIPS, Stanley A., 490 Sheridan Rd., Evanston, Ill. (1937)
PHILLIPS, William G., 429 Partington Ave., Windsor, Ont., Canada. (1950)
PHILLIPS, William T., Kitty Hawk, N.C. (1941)
PHINNEY, Josiah T., New York State Col. for Teachers, Albany, N.Y. (1931)
PHIPPS, Irving R., 255 Park Ave., Munsey Park, Manhasset. L.I., N.Y. (1929)
PHOTIAS, Nicos G., 3729 Massachusetts Ave., N.W., Washington 16, D.C. (1948)
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PICKART, Delmore M., 1913 Regent St., Madison 5, Wis. (1947)
PICKEN, Robert F., 1228 E. 56th St., Chicago 37, Ill. (1948)
PICKERING, Richard C., 57 E. 98th St., Apt. B, New York 29, N.Y. (1949)
PICKETT, Ralph R., Univ. of Kentucky, Col. of Com., Lexington, Ky. (1925)
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PIERCE, Francis S., 1900 Jackson St., N.E., Washington 18. D.C. (1951)
PIERCE, J. Eugene, Univ. of Florida, Col. of Bus. Admin., Gainesville, Fla. (1951)
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PINKSTAFF, Virgil, Shurtleff Col., Alton, Ill. (1948)
PINTER, Matthew D., 18 E. Fourth Ave., Latrobe, Pa. (1951)
PINTO, Peter J. J., Elizabeth House, Gokhale Rd., S., Dadar, Bombay 28, India. (1948)
PINTO, René W., 920 26th Pl., S., Arlington, Va. (1948)
PIOVIA, Frank, 200 N. Trenton St., Arlington 3, Va. (1945)
PITARQUE, Walter J., Apartado 3094, Quito, Ecuador. (1952)
PITIGLIANI, Fausto R., Via Antonio Allegri 13, Rome, Italy. (1938)
PITKIN, William A., Southern Illinois Univ., Carbondale, Ill. (1946)
PITT, Courtnay H., Philco Corp., Tioga and C Sts., Philadelphia, Pa. (1936)
PITTERMAN, Marvin, 67 Sandlewood Ave., Norwood 7, R.I. (1950)
PITTMAN, Irma F., 2500 Wisconsin Ave., N.W., Apt. 457, Washington 7, D.C. (1948)
PITTS, Alexander, Jr., 45 Dales Ave., Jersey City 6, N.J. (1948)
PIXLEY, Rex A., Goldvein, Va. (1948)
PLANK, Ellsworth H., 1713 Olive, Denver, Colo. (1951)
PLANTING, Martin P., 3402 Garfield St., N.W., Washington 7, D.C. (1945)
PLANTZ, Don V., Bldg 35, Apt. 1, Hoosier Cts., Bloomington, Ind. (1950)
PLAUT, Walter, 701 Madison Ave., New York 21, N.Y. (1944)
PLAXICO, James S., Virginia Poly. Inst., Dept. Agric. Econ., Blacksburg, Va. (1951)
PLESHER, Michael A., R.D. 1, Country Club R[d.], Monongahela, Pa. (1947)
PLIMSOLL, James, Australian Embassy, Djakart[a], Indonesia. (1945)
PLOTNIK, Mortin J., Blackburn Col., Dept. of Eco[n.], Carlinville, Ill. (1946)
PLOUS, Harold J., Santa Barbara Col., Univ. of California, Santa Barbara, Calif. (1950)
§PLOWMAN, E. Grosvenor, Schenley Apts., Pittsburgh 13, Pa. (1922)
PLUM, Lester V., 24 Murray Pl., Princeton, N.J. (194
PLUMLEY, Alden J., Univ. of Nevada, Dept. of Eco[n.], Reno, Nev. (1928)
PLUMMER, Wilbur C., Univ. of Pennsylvania, Wharton Sch., Philadelphia 4, Pa. (1925)
PODOSKI, Joseph J., 215 C St., S.E., Apt. 509, Washington 3, D.C. (1951)
POGUE, Joseph E., 18 Pine St., New York 15, N.Y. (1924)
POINDEXTER, J. Carl, Mt. Regis, Salem, Va. (193
POLAK, Jacques J., 3420 Porter St., N.W., Washington 16, D.C. (1946)
POLAKOFF, Murray, Univ. of Texas, Dept. of Eco[n.], Austin 12, Texas. (1951)
POLEK, Paula J., 4001 Cresson St., Philadelphia 2[8], Pa. (1948)
**POLEMIS, Bernice W. (Mrs. Zane M.), 55[27] Cornell Ave., Chicago 37, Ill. (1949)
POLEMIS, Zane M., 5527 Cornell Ave., Chicago 3[7], Ill. (1944)
POLINSKY, Ella J., 1515 16th St., N.W., Washington 6, D.C. (1943)
*POLKINGHORN, Robert S., 3510 Woods Av[e.], Lincoln, Neb. (1950)
*POLLACK, Gerald A., 3924 48th St., Long Isla[nd] City 4, N.Y. (1951)
POLLACK, Irving, 2264 Walton Ave., Bronx, New Yo[rk] 53, N.Y. (1952)
§POLLARD, George M., Box 137, Vienna, Va. (1938
POLLNER, Marco D., Dept. of Econ. Affairs, Unit[ed] Nations, N.Y. (1950)
POLLOCK, Frederick, c/o Institut für Sozialforschun[g], 26 Senckenberganlage, Frankfurt a/M, German[y]. (1934)
POLNER, Walter, Univ. of Illinois, Inst. of Labor a[nd] Ind. Rela., 704 S. Sixth St., Champaign, Ill. (1948)
POLYZOIDES, Adamantios T., 620 S. Ardmore Av[e.], Los Angeles 5, Calif. (1940)
POMERANTZ, Sidney I., 35 Crown St., Brooklyn 2[5], N.Y. (1943)
POND, A. Smith, Brigham Young Univ., Provo, Uta[h]. (1938)
*PONTECORVO, Giulio, 722 S. 41st St., Apt. 1 Richmond, Calif. (1951)
POOLE, Elmer W., 37 St. Paul's Pl., Brooklyn 2[6], N.Y. (1946)
POOLE, Kenyon E., Northwestern Univ., Dept. Econ., Evanston, Ill. (1937)
POPPE, Janus, 122 S. 5th St., Lewisburg, Pa. (1950)
POPPER, Frederick E., 747 Eastbourne Ave., Otta[wa] 2, Ont., Canada. (1952)
PORTER, Allan, 11½ Spadina Rd., Toronto 4, On[t.], Canada. (1948)
PORTER, Arthur R., Jr., Hanover Col., Hanover, In[d.] (1941)
PORTER, John H., Indiana Univ., Sch. of Bus., Bloomington, Ind. (1949)
PORTER, Richard L., St. Louis Univ., St. Louis Mo. (1945)
POSEY, Thomas E., Rangoon TCA, American Em[]bassy, c/o Dept. of State, Washington 25, D.[C.] (1952)
POST, A. Alan, State Capitol Bldg., Room 445, Sacramento 14, Calif. (1945)
POST, Albert, Dept. of State Mail Room, Washington 25, D.C. (1950)
POSTELNEK, Paul E., 1109 Trenton Pl., S.E., Washington 20, D.C. (1950)
*POTEET, Marcus L., Waverly, Neb. (1952)
POTTER, Alden A., Box 181, R.F.D. 3, Bethesda 1[4], Md. (1942)
POTTER, Helen, Univ. of California, Div. of Hor[ne] Econ., Davis, Calif. (1945)

POULTON, Edgar E., 10229 Howard Ave., Kensington, Md. (1942)
POWELL, Franklin E., 6516 Ridge Dr., Brookmont, Washington 16, D.C. (1944)
POWELL, H. Robert, Merrill's Subdiv. R. 1, Algonquin, Ill. (1950)
POWELL, J. Richard, Univ. of California, Dept. of Econ., Los Angeles 24, Calif. (1950)
POWELL, M. A., 231 S. La Salle St., Chicago, Ill. (1948)
POWELL, Raymond P., Yale Univ., Dept. of Econ., New Haven, Conn. (1951)
POWELL, Weldon, 67 Broad St., New York 4, N.Y. (1924)
POWERS, Richard, 3515 Stuart Ave., Apt. 101, Richmond, Va. (1946)
POYTRESS, William H., San Jose State Col., San Jose 14, Calif. (1949)
PRASOW, Paul, 7311 Rindge Ave., Playa del Rey, Venice, Calif. (1947)
PRATHER, Charles L., 2200 Parkway, Austin 21, Tex. (1931)
PRATHER, Robert M., Merck & Co., Rahway, N.J. (1944)
PREHN, Edward C., Jr., 200 Hart Blvd., Staten Island 1, N.Y. (1937)
PRENTICE, James S., Middlebury Col., Middlebury, Vt. (1935)
PREST, Wilfred, Univ. of Melbourne, Econ. Dept., Melbourne N. 3, Vic., Australia. (1949)
PRESTON, Stanley W., Box 8415, Univ. Sta., Baton Rouge, La. (1933)
PRETTI, Reno C., R.F.D. 2, Glenwood Springs, Colo. (1947)
PREWITT, Roy A., 4339 26th St., N., Arlington 7, Va. (1940)
*PRIBRAM, Edith (Mrs. Karl), 3625 16th St., Washington, D.C. (1952)
PRIBRAM, Karl, 3625 16th St., Washington, D.C. (1939)
PRICE, Arthur J., 20236 Regent Dr., Detroit 5, Mich. (1951)
PRICE, C. Hoyt, FSO, Saigon, Dept. of State, c/o Mail Room, Washington 25, D.C. (1947)
PRICE, Galen B., Ford Motor Co., Purch. Res. Dept., 3000 Schaefer Rd., Dearborn, Mich. (1950)
PRICE, Hugh B., Univ. of Kentucky, Dept. of Mkts. and Rural Fin., Lexington, Ky. (1918)
PRICE, Ralph B., 90 Highfield Ave., Port Washington, N.Y. (1950)
PRICE, Reginald C., 4314 Rosedale Ave., Bethesda, Md. (1947)
PRICHARD, Lewis G., 1212 S.E. 32nd Pl., Portland 15, Ore. (1948)
PRICHARD, Robert E., 1728 Orchard St., Des Plaines, Ill. (1946)
PRIME, John H., New York Univ., Sch. of Com., Washington Sq., New York 3, N.Y. (1925)
PRIMUS, John C., Highlands Univ., Las Vegas, N.M. (1950)
PRINCE, Charles, 64-41 Saunders St., Forest Hills 74, Queens, N.Y. (1945)
PRINCE, Jack E., 1467 E. Hudson St., Columbus 11, Ohio. (1948)
PRINZ, Arthur M., Dickinson Col., Carlisle, Pa. (1949)
PRISCO, Joseph C., 301 Warren Ave., East Providence, R.I. (1951)
PRITCHARD, Leland J., 1725 Mississippi, Lawrence, Kans. (1940)
PRITCHARD, Neal A., Ohio Wesleyan Univ., Econ. Dept., Delaware, Ohio. (1950)
PRITCHARD, Norris T., U. S. Dept. of Agric., Bur. of Agric. Econ., Div. of Mkt. and Transp. Res., Washington 25, D.C. (1949)
PRITCHETT, William M., Fed. Res. Bank, Dallas 13, Tex. (1946)
PROCHNOW, Herbert V., First Nat. Bank of Chicago, Chicago, Ill. (1949)
PROCTOR, Edward W., 204 Easterly Pkwy., State College, Pa. (1950)
PRODRICK, Robert G., 241 Park Rd., Rockcliffe Park, Ottawa, Ont., Canada. (1949)
PROSCHAN, Arnold, 1644 Colonial Ter., Arlington, Va. (1949)
PROSCHANSKY, Harris, 1375 Grand Concourse, New York, N.Y. (1952)
PRUEFER, Clifford H., 1500 Lee Blvd., Arlington, Va. (1948)
PTASZEK, Chester L., 2619 Deming Ave., Columbus 2, Ohio. (1951)
PUCKETT, Erastus P., Central Col., Fayette, Mo. (1935)
PUENTE-DUANY, Rafael B., 6 No. 69, esq. 7a. Ave. Apart. 1, Reparto Miramar, Havana, Cuba. (1943)
PUGH, Olin S., 810 Second St., Durham, N.C. (1950)
PUGSLEY, W. H., 64, Spalenring, Basle, Switzerland. (1949)
PULLEN, Robert W., 11 Greenwood St., Waterville, Me. (1945)
PULLMAN, Doris E., 1702 Jefferson St., Madison 5, Wis. (1949)
PUMA, John J., 127 Woburn St., Lexington 73, Mass. (1951)
PUNGTRAGUL, Chalong, 23 adjoining Saint Louis Hospital, Off Sathorn Rd., Bangkok, Thailand. (1946)
PURDY, William A., USMA, Dept. of Soc. Sci., West Point, N.Y. (1952)
PYLE, John F., Univ. of Maryland, Col. of Bus. and Pub. Admin., College Park, Md. (1926)

QUALLS, Le Roy L., Univ. of Florida, Col. of Bus. Admin., Gainesville, Fla. (1941)
QUAMMEM, Francis R., Colorado State Col. of Educa., Greeley, Colo. (1950)
QUANTIUS, Frances W., Ohio State Univ., Col. of Com. and Admin., Columbus 10, Ohio. (1943)
QUIGLEY, Carroll, 4448 Greenwich Pkwy., N.W., Washington 7, D.C. (1943)
QUINN, Thomas F., 3674 Lindell Blvd., St. Louis 8, Mo. (1952)
QUINTERO-RAMOS, Angel M., Univ. of Puerto Rico, P.O. Box 179, Rio Piedras, P.R. (1950)
QUINTO, Leon, 75 Central Park W., New York, N.Y. (1949)
QUIRE, (Mrs.) Catharine D., 1400 Hawthorne Ter., Berkeley 8, Calif. (1928)
QUIRIN, E. Lafayette, 5 Elm St., Wellesley Hills 82, Mass. (1940)
QUIRIN, George D., 1712 Suffolk St., Calgary, Alta., Canada. (1952)
QUIRK, Charles B., Providence Col., Providence, R.I. (1945)
QUIRK, James P., 1107 Trenton Pl., S.E., Apt. 1C, Washington 11, D.C. (1951)
QURESHI, Anwar Iqbal, Int. Monetary Fund, Washington 25, D.C. (1952)

*RABINOWITZ, William T., 2530 Ocean Ave., Brooklyn 29, N.Y. (1951)
RABORN, Mamie, 1211 Kemp Blvd., Wichita Falls, Tex. (1949)
RADVANYI, Laszlo, Donato Guerra 1, desp. 207, Mexico, D.F. (1945)
¶RAEBECK, Albert J., 118 Varnum St., N.E., Washington 11, D.C. (1947)
*RAFFAELE, Joseph A., 5128 Seven Oaks Dr., Clifton Heights, Pa. (1948)
RAFLER, (Mrs.) Doris D., U. S. Dept. of Agric., Office of For. Agric. Rela., Washington 25, D.C. (1944)
RAID, Howard D., Bluffton Col., Bluffton, Ohio. (1947)
RAIMON, Robert L., Cornell Univ., I.L.R., Ithaca, N.Y. (1950)
RALL, Leonard, 819 Lantern Hill Dr., East Lansing, Mich. (1951)
RALLIS, John J., Bellview Heights, Ashland, Mass. (1950)
RAMS, Edwin M., 2616 N. Harding Ave., Chicago 47, Ill. (1953)
RAMSEY, Fredlyn, 750 W. 47th St., Kansas City, Mo. (1943)
*RANDALL, Darrell D., 5661 S. Drexel Ave., Chicago 37, Ill. (1953)
RANDALL, R. J., Natal Univ. Col., Warwick Ave., Durban, S. Africa. (1946)
RANDLE, C. Wilson, Women's Fed. Bldg., Room 202, 314 Superior Ave., Cleveland 14, Ohio. (1946)
RANKIN, Andrew F., 30 Ebbett Ave., Wollaston 70, Mass. (1946)
*RANSCHBURG, Herbert J., 81-10 135th St., Kew Gardens, N.Y. (1952)
RANSMEIER, Joseph S., Dartmouth Col., Dept. of Econ., Hanover, N.H. (1946)
RANSOM, Lawrence O., 254 N. Mill St., Plymouth, Mich. (1950)
RANT, Walter F., 2261 Gleason Ave., New York 61, N.Y. (1949)

RAO, S. R. N. Badri, Int. Bank for Recon. and Dev., Res. Div., 1818 H St., N.W., Washington, D.C. (1946)
RAPHAEL, Lawrence, 3110 Earlham Dr., Dayton 6, Ohio. (1951)
RAPKIN, Chester, 301 W. 96th St., New York 25, N.Y. (1947)
RAPPAPORT, Donald, 502257, USS Henderson DD 785, c/o FPO, San Francisco, Calif. (1948)
†RAPPARD, William E., Valavran, near Geneva, Switzerland. (1911)
RASHISH, Myer, 309 N. Thomas St., Arlington, Va. (1948)
RASMUSSEN, E. Guy, Vanderbilt Univ., Nashville, Tenn. (1948)
RASMUSSEN, Jewell J., Univ. of Utah, Salt Lake City 1, Utah. (1947)
RATCHFORD, Benjamin U., Box 4727, Duke Sta., Durham, N.C. (1929)
RATCLIFF, Richard U., Univ. of Wisconsin, Sterling Hall, Madison 6, Wis. (1935)
RATNER, Sidney, 11 Cleveland Lane, Princeton, N.J. (1939)
RAUCH, Abraham, 1392 Franklin Ave., New York 56, N.Y. (1949)
RAUP, Philip M., Univ. of Wisconsin, Col. of Agric., Dept. of Agric. Econ., Madison 6, Wis. (1949)
RAUSHENBUSH, Paul A., 2228 Hillington Green, Madison, Wis. (1923)
RAVER, Paul J., 729 N.E. Oregon, Portland 8, Ore. (1933)
§RAWLS, John C., Prairie View A. and M. Col., Prairie View, Tex. (1951)
RAY, Donald P., George Washington Univ., Hall of Gov., Washington 6, D.C. (1944)
RAY, Robert S., IIAA Lima, Div. of Ind., Gov., and Tech. Services, Dept. of State, Washington 25, D.C. (1949)
RAYACK, Elton, 3512 13th St., S.E., Washington, D.C. (1950)
RAYMAKER, Constance L., 854 E. State St., Jacksonville, Ill. (1929)
RAYMOND, Fred I., 629 W. Washington Blvd., Chicago 6, Ill. (1943)
READ, Leonard E., Found. for Econ. Educa., Irvington-on-Hudson, N.Y. (1937)
**REAGAN, Barbara B. (Mrs. Sydney C.), 3128 N. Thomas St., Arlington, Va. (1947)
REAGAN, Sydney C., 3128 N. Thomas St., Arlington, Va. (1947)
REAGEN, Edward P., 919 N.E. 18th Ave., Fort Lauderdale, Fla. (1950)
§REBELÉ, Ralph H., 4 Montgomery St., San Francisco, Calif. (1941)
REBER, Hugh J., Griffenhagen & Associates, 333 N. Michigan Ave., Chicago, Ill. (1942)
RECK, Dickson, Univ. of California, Sch. of Bus. Admin., Berkeley 4, Calif. (1952)
REDDING, John J., 3722 Ingalls Ave., Hyattsville, Md. (1950)
REDLICH, Fritz L., 42 Oak St., Belmont, Mass. (1937)
REDMAN, John C., Univ. of Kentucky, Dept. of Farm Econ., Lexington 29, Ky. (1949)
REED, Edward W., Univ. of Arkansas, Col. of Bus. Admin., Fayetteville, Ark. (1940)
REED, Harold L., 422 Cayuga Heights Rd., Ithaca, N.Y. (1912)
REED, Richard W., Norwich Univ., Northfield, Vt. (1950)
REED, Spencer H., 3839 Garfield St., N.W., Washington, D.C. (1946)
REEDER, Charles B., P.O. Box 343, Landisville, Pa. (1949)
REEDY, J. H., Jr., Pennsylvania State Col., Div. of Econ., State College, Pa. (1946)
REEDY, Theodore W., 316 N. Thomas St., Arlington, Va. (1940)
REES, Albert E., 1443 E. 60th Pl., Chicago 37, Ill. (1948)
REESE, Jim E., Univ. of Oklahoma, Dept. of Econ., Norman, Okla. (1948)
REEVE, Joseph E., 5601 Lambeth Rd., Bethesda 14, Md. (1931)
REGIER, Donald W., Nat. City Bank of N.Y., Casilla de Correo 690, Montevideo, Uruguay. (1953)
REGUERO, Miguel A., 174 Lexington Ave., Dayton 7, Ohio. (1949)

REHN, Henry J., Southern Illinois Univ., Carbondal Ill. (1947)
REICH, Joseph, 21 Hampton Ave., Tuckahoe, N. (1940)
REICH, Nathan, 73 French Ridge, New Rochelle, N. (1936)
REICHARD, Robert S., 55 E. 196th St., New York 5 N.Y. (1950)
REICHLEY, Marlin S., Ind. Col. of the Armed Forc Fort Lesley J. McNair, Washington 25, D.C. (195
REID, Elliot, 26 Broadway, Room 1237, New Yor N.Y. (1946)
REID, James H., Univ. of Maryland, Col. of Bus. a Pub. Admin., College Park, Md. (1947)
§REID, James M., Harcourt, Brace & Co., 383 Madis Ave., New York 17, N.Y. (1949)
REID, Margaret G., 1155 E. 56th St., Chicago 37, I (1932)
REIERSON, Roy L., 80 Cranberry St., Brooklyn N.Y. (1929)
REIFLER, Ronald M., 3036 W. Palmer Sq., Chicago 4 Ill. (1948)
REIFMAN, Alfred, 7008 Wilson Lane, Bethesda 1 Md. (1946)
REIK, Otto E., 3725 Macomb St., N.W., Washingt D.C. (1949)
REILLY, Edward E., Univ. of Western Ontario, Lo don, Ont., Canada. (1936)
REIMANN, Guenter, 660 Riverside Dr., New Yo N.Y. (1944)
REINER, James, 20 E. Cedar St., Chicago 11, I (1936)
REINERTSEN, Peter A., 3500 39th St., N.W., Was ington 16, D.C. (1943)
REINHARDT, Hedwig, 779 Riverside Dr., New Yo N.Y. (1942)
REISCHER, Otto R., 4358 N. Pershing Dr., Arlingt Va. (1948)
REISMAN, George F., 240 E. Palisade Ave., Eng wood, N.J. (1946)
REISS, Franklin J., 601 E. Washington St., Urbana, (1951)
REITER, Stanley, Stanford Univ., Dept. of Econ., Sta ford, Calif. (1948)
REMER, Charles F., 1016 Martin Pl., Ann Arb Mich. (1923)
REMINGTON, Harry G., Investors Diversified Se ices, Inc., Minneapolis 2, Minn. (1951)
RENFROE, W. N., Woman's Col. of the Univ. of No Carolina, Dept. of Econ., Greensboro, N.C. (1950)
RENNE, Roland R., Montana State Col., Bozem Mont. (1931)
RENNIE, Robert A., Farm Bur. Ins. Cos., 246 N. Hi St., Columbus, Ohio. (1949)
RENSHAW, Percy A., Box 34, Univ. Sta., Syracuse N.Y. (1949)
REUBENS, Edwin P., City Col. of New York, Dept. Econ., New York, N.Y. (1946)
REUSS, Frederick G., 519 Murdock Rd., Baltimore Md. (1945)
REVZAN, David A., 1364 Rose St., Berkeley 2, Ca (1948)
REYNOLDS, Alice J. (Mrs. Richard A.), Baldwin, M (1940)
REYNOLDS, Ellsworth G., Gen. Motors Corp., 1 Broadway, New York 19, N.Y. (1948)
REYNOLDS, Hal F., 8336 Whitewood Rd., Brecksvi Ohio. (1952)
REYNOLDS, John E., c/o Bank for Int. Settlemen Basle, Switzerland. (1948)
REYNOLDS, Lloyd G., Yale Univ., 213 Strathco Hall, New Haven, Conn. (1937)
REYNOLDS, Roy R., 3447 Market St., Riversi Calif. (1949)
REYNOLDS, Thomas J., Old Morristown Rd., B nardsville, N.J. (1941)
REYNOLDS, William A., 350 E. 54th St., New York N.Y. (1944)
*REYNOLDS, William M., Michigan State Col., De of Econ., East Lansing, Mich. (1953)
RHODES, Edward E., 233 Elwood Ave., Newark N.J. (1923)
*RHOMBERG, Rudolf R., Clintonville Rd., Northfo Conn. (1951)
RICCIARDI, Franc M., N.Y. Inst. of Fin., 20 Br St., New York 5, N.Y. (1949)
RICE, Howard D., 847 W. Grand Ave., Decatur, (1950)

RICE, John P., 4311 Duplessis St., Apt. C, New Orleans, La. (1949)
RICE, Lloyd P., 4 Webster Ter., Hanover, N.H. (1915)
RICH, Chester L., Cornell Col., Mt. Vernon, Iowa. (1944)
RICHARDS, Cecil S., S. African Jour. of Econ., Univ. of the Witwatersrand, Milner Park, Johannesburg, S. Africa. (1932)
*RICHARDS, Elizabeth A., 37 E. Schiller St., Chicago 10, Ill. (1952)
RICHARDS, Henry M. M., Temple Univ., Philadelphia 22, Pa. (1949)
RICHARDS, Howard E., 329 Filmore St., Cuyahoga Falls, Ohio. (1940)
RICHARDSON, James G., Univ. of Florida, 119 Bldg. D, Gainesville, Fla. (1951)
RICHARDSON, John H., 1 Lord St., O'Connor, Canberra, A.C.T., Australia. (1943)
RICHARDSON, Reed C., Univ. of Utah, Econ. Dept., 231 Annex, Salt Lake City, Utah. (1947)
RICHMAN, Donald H., Jamison, Bucks Co., Pa. (1950)
RICHMAN, Raymond L., 5136 Ingleside, Chicago 15, Ill. (1948)
RICHMOND, Samuel E., Columbia Univ., Sch. of Bus., New York 27, N.Y. (1948)
RICHTER, John H., 5301 Old Dominion Dr., Falls Church, Va. (1946)
RICKARD, Edward M., 376 E. College St., Meadville, Pa. (1949)
RICKETTS, Faye M., Univ. of Wichita, Wichita, Kans. (1938)
RIDDLE, Jesse H., 36 Gramercy Pk., New York, N.Y. (1917)
RIDDLE, N. Gilbert, Ohio State Univ., Col. of Com., Columbus, Ohio. (1925)
RIDGEWAY, George L., Int. Bus. Machines Corp., 590 Madison Ave., New York 22, N.Y. (1947)
**RIEFLER, Dorothy B. (Mrs. Winfield W.), 5400 27th St., N.W., Washington, D.C. (1943)
RIEFLER, Winfield W., 5400 27th St., N.W., Washington, D.C. (1937)
RIEGEL, John W., Univ. of Michigan, Bur. of Ind. Rela., 312 Bus. Admin. Bldg., Ann Arbor, Mich. (1936)
RIEGER, William, 1125 Columbia St., Scranton, Pa. (1950)
RIGBY, Paul H., P.O. Box 1871, University, Ala. (1952)
RIGGS, Fletcher E., Kansas State Col., Dept. of Agric. Econ., Manhattan, Kans. (1950)
RIGGS, (Mrs.) Judith M., Univ. of California, Econ. Dept., Berkeley 4, Calif. (1947)
RILEY, Donald C., R.F.D. 5, Box 264, Valley View Dr., Alexandria, Va. (1928)
RILEY, Frank A., St. Mary's Univ., San Antonio 7, Tex. (1949)
RILEY, H. E., 2248 N. Quebec St., Arlington, Va. (1934)
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RILEY, Roderick H., 5609 Madison St., Bethesda, Md. (1932)
RINFRET, Pierre A., 98-40 64th Ave., Forest Hills, N.Y. (1952)
RING, Alfred A., 16 N.W. 20th Ter., Gainesville, Fla. (1946)
RIPPS, Evelyn L., The Berkshire, A231C, Washington 16, D.C. (1943)
‡RIST, Charles, 4 rue Michelet, Paris, France. (1922)
*RISTIC, Radivoj, 39 E. 78th St., New York 21, N.Y. (1952)
RITCHIE, Fred, American Embassy, APO 500, c/o Postmaster, San Francisco, Calif. (1936)
RITLAND, Raymond W., Tulane Univ., Col. of Com., New Orleans 18, La. (1951)
¶RITTER, Lawrence S., Michigan State Col., Dept. of Econ., East Lansing, Mich. (1947)
RITZ, Philip M., 2805 Erie St., S.E., Washington 20, D.C. (1943)
RIVEL, Robert B., Chase Nat. Bank, Econ. Res. Dept., New York 15, N.Y. (1947)
RIVERA, Hector J., 66 E. 110th St., New York, N.Y. (1947)
RIVERS, Robert L., 314 Highland St., Worcester 2, Mass. (1948)
*RIVOIRE, John, 63-168 Alderton St., Rego Park 74, N.Y. (1953)
ROADCAP, Roy R., 327 S. La Salle St., Chicago 4, Ill. (1946)
ROBB, T. Bruce, 6745 Holmes St., Kansas City 5, Mo. (1921)
ROBB, William C., Univ. of Illinois, Col. of Com., Urbana, Ill. (1937)
ROBBE, Charles W., Community High Sch., Orangeville, Ill. (1948)
ROBBINS, Chandler, 60 Sutton Pl., S., New York 22, N.Y. (1943)
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ROBBINS, Sidney, Univ. of Toledo, Toledo 6, Ohio. (1940)
ROBERTS, David R., Carnegie Inst. of Tech., Dept. of Econ., Pittsburgh 13, Pa. (1938)
ROBERTS, Evan O., West Virginia Univ., Dept. of Econ. and Bus. Admin., Morgantown, W.Va. (1942)
ROBERTS, Frank L., 2423 A St., Lincoln, Neb. (1943)
ROBERTS, George B., Nat. City Bank of N.Y., New York, N.Y. (1932)
ROBERTS, Harold S., Univ. of Hawaii, P.O. Box 18, Honolulu 10, Hawaii. (1937)
ROBERTS, Hazel V., 526 W. 113th St., New York 25, N.Y. (1925)
ROBERTS, (Mrs.) Lea R. P., 1023 Knollwood Rd., White Plains, N.Y. (1950)
ROBERTS, Merrill J., Univ. of Florida, Faculty Office Bldg., Gainesville, Fla. (1944)
ROBERTS, Thomas, 1135 W. Wingohocking St., Philadelphia 40, Pa. (1945)
ROBERTS, Verl E., 6938 Blaisdell Rd., Bethesda 14, Md. (1942)
ROBERTS, Warren A., 7 Mills Pl., Crawfordsville, Ind. (1945)
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ROBERTSON, Laurie, 1428 Washington Heights, Ann Arbor, Mich. (1946)
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ROBERTSON, Ross M., Univ. of Tennessee, P.O. Box 8327, Knoxville, Tenn. (1949)
ROBEY, Ralph W., Dalzell, S.C. (1927)
ROBIN, William C., 1327 Leavenworth St., San Francisco 9, Calif. (1952)
ROBINSON, Betty B., Population Div., United Nations, N.Y. (1951)
ROBINSON, Dwight E., Univ. of Washington, Col. of Bus. Admin., Seattle 5, Wash. (1948)
ROBINSON, Edward A., Univ. of Maryland, Col. of Bus. and Pub. Admin., Dept. of Econ., College Park, Md. (1950)
ROBINSON, Eleanor J., Baylor Univ., Dept. of Econ., Waco, Tex. (1950)
ROBINSON, Fred A., 365 Clinton Ave., Apt. 2-G, Brooklyn 5, N.Y. (1952)
ROBINSON, Hamlin, 4818 Drummond Ave., Chevy Chase 15, Md. (1950)
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ROBINSON, Joe A., 22 Lee Blvd., Falls Church, Va. (1945)
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ROBINSON, Myles E., 7505 Lynn Dr., Chevy Chase 15, Md. (1937)
ROBINSON, Newton Y., 71 Federal St., Brunswick, Me. (1952)
ROBINSON, Robert M., 1061 E. 188th St., Seattle 55, Wash. (1952)
ROBINSON, Roland I., Northwestern Univ., Sch. of Com., Evanston, Ill. (1945)
ROBINSON, Romney, 38 Sherborn St., Arlington 74, Mass. (1949)
ROBINSON, Thomas H., 66 Thurlow Rd., Hampstead, Que., Canada. (1933)
ROBOCK, Stefan H., Ind. Econ. Br., TVA, Knoxville, Tenn. (1946)
ROBOTKA, Frank, Iowa State Col., Ames, Iowa. (1923)
ROCKAFELLOW, Robert, Rhode Island State Col., Kingston, R.I. (1935)
RODDENBERY, Thaddeus H., 21 School St., Franklin, Mass. (1952)
RODGERS, Raymond, 34-37 80th St., Jackson Heights, N.Y. (1949)

RODIN, Nicholas W., Johns Hopkins Univ., Sch. of Polit. Econ., Baltimore 18, Md. (1949)
RODKEY, Robert G., Univ. of Michigan, Sch. of Bus. Admin., Ann Arbor, Mich. (1919)
RODWIN, Lloyd, M.I.T., Sch. of Arch. and Plann., 77 Massachusetts Ave., Cambridge 39, Mass. (1953)
RODZENKO, Michael, Malden Hospital, Malden, Mass. (1949)
ROE, Frederick, Stein, Roe & Farnham, 135 S. La Salle St., Chicago 3, Ill. (1932)
ROELSE, Harold V., Fed. Res. Bank, New York 45, N.Y. (1930)
ROESLER, Theodore W., Augustana Col., Econ. Dept., Rock Island, Ill. (1947)
ROFE, Robert L., Newington Col., Stanmore, Sydney, N.S.W., Australia. (1952)
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ROGERS, Bernard L., 2016 15th Ave., San Francisco 16, Calif. (1948)
ROGERS, Clayton T., Jr., P.O. Box 314, Thompsonville, Conn. (1948)
ROGERS, H. Barrett, Northwestern Univ., Tech. Bldg., Room 404, Evanston, Ill. (1946)
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ROGERS, William E., Univ. of Oklahoma, Faculty Exch., Norman, Okla. (1950)
ROGGE, Benjamin A., 316 S. Washington, Crawfordsville, Ind. (1952)
ROGOW, Robert, 98-09 64th Rd., Apt. 6J, Forest Hills, N.Y. (1951)
ROHRBAUGH, Daniel W., 900 Ft. Augusta Ave., Sunbury, Pa. (1948)
ROHRLICH, George F., 1769 Northern Pkwy., Baltimore 12, Md. (1942)
ROIG, Lester C., Jr., 1848 Wooster Rd., Rocky River 16, Ohio. (1951)
ROJKO, Anthony S., 4244 4th St., S.E., Apt. 1, Washington 20, D.C. (1948)
ROLFE, Sidney E., 84 Riverside Dr., New York 24, N.Y. (1947)
ROLLEFSON, Arthur M., 724 Woodlawn Ave., Falls Church, Va. (1946)
ROLLER, George H., 8806 Flower Ave., Silver Spring, Md. (1944)
ROLLINS, Mabel A., New York State Col. of Home Econ., Cornell Univ., Ithaca, N.Y. (1951)
ROLNICK, R. Lillian, 731 Ave. A, Bayonne, N.J. (1951)
ROLPH, Earl R., Nat. Bur. of Econ. Res., 1819 Broadway, New York 23, N.Y. (1945)
ROLPH, John G., 227 E. 57th St., New York 22, N.Y. (1940)
RONDILEAU, Adrian, Pace Col., 41 Park Row, New York 38, N.Y. (1947)
RONK, S. Edward, 808 Tinkham Rd., Wilbraham, Mass. (1940)
RONK, Sally S. (Mrs. Stewart), 299 St. Marks Pl., Staten Island 1, N.Y. (1942)
ROOD, John R., R. 2, Tawas City, Mich. (1947)
¶ROOS, Charles F., 30 E. 37th St., New York 16, N.Y. (1946)
ROOSA, Robert, Fed. Res. Bank, New York 45, N.Y. (1941)
ROOSE, Kenneth D., 374 W. College St., Oberlin, Ohio. (1940)
ROOT, Franklin R., Montgomery Rd., Box 266, R.F.D. 1, College Park, Md. (1949)
ROPER, Burkhardt, Rockefeller Found., 49 W. 49th St., New York 20, N.Y. (1952)
¶ROPER, Elmo, R.F.D. 4, Ridgefield, Conn. (1944)
ROPKE, Wilhelm, 45, Ave. de Champel, Geneva, Switzerland. (1946)
ROREM, C. Rufus, 311 S. Juniper St., Philadelphia 7, Pa. (1927)
ROSA, Joseph, 3503 Rodman St., N.W., Washington 9, D.C. (1942)
ROSE, Glen, 6541 42nd Ave., S.W., Seattle, Wash. (1950)
ROSE, Joseph R., 205 Logan Hall, 36th St. and Woodland Ave., Philadelphia 4, Pa. (1934)
ROSEN, George, 3040 Idaho Ave., N.W., Washington 16, D.C. (1944)
ROSEN, Harold H., 2815 31st St., S.E., Washington 20, D.C. (1949)
ROSEN, Martin M., Int. Bank for Recon. and Dev., Washington 25, D.C. (1943)
ROSEN, Sam, Univ. of Delaware, Dept. of Econ., Newark, Del. (1950)
ROSENBAUM, Arthur R., 63 Bokee Ct., Bldg. Beachhaven, Brooklyn 23, N.Y. (1948)
ROSENBAUM, Clarence H., 2025 Lincoln Ave., A[illegible] B2, Evansville 14, Ind. (1942)
ROSENBERG, Leonard G., 1443 Sheridan St., N.V[illegible] Washington, D.C. (1951)
ROSENBERG, Nathan, Queen's Col., Oxford, Englar[illegible] (1950)
ROSENBERG, Samuel A., 240 E. Dorrance St., Kin[illegible]ston, Pa. (1951)
ROSENBLATT, Samuel M., 4006 N. 5th St., Arlingt[illegible] Va. (1952)
ROSENBLOOM, Hilda (Mrs. Arthur H.), 8 Servi[illegible] Dr., Wellesley, Mass. (1948)
ROSENBLUTH, Gideon, Stanford Univ., Dept. Econ., Stanford, Calif. (1948)
ROSENBORG, Ansgar, United Nations, Dept. [illegible] Econ. Affairs, Lake Success, N.Y. (1944)
ROSENFIELD, Myron, 30 Flower Lane, Rosl[illegible] Heights, L.I., N.Y. (1940)
ROSENSON, Alexander M., 5347 28th St., N.V[illegible] Washington 15, D.C. (1940)
ROSENSTOCK-FRANCK, Louis, 31, blvd. du Co[illegible]mandant Charcot, Neuilly-sur-Seine, France. (194[illegible]
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ROSENTHAL, Joseph, 3602 Delano St., Wheat[illegible] Md. (1948)
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ROSLER, Alice, 7608 S. Kingston Ave., Chicago 49, I[illegible] (1949)
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ROSS, David F., Col. of Agric. and Mech. Arts, B[illegible] 434, Mayaguez, P.R. (1950)
ROSS, Edwin B., 907 Rogers Bldg., Vancouver, B.[illegible] Canada. (1916)
ROSS, Emerson, 5321 Tuscarawas Rd., Washington 1[illegible] D.C. (1939)
ROSS, Harold G., 325 S. Geneva St., Ithaca, N.[illegible] (1953)
ROSS, Harry A., Borden Co., Bur. of Econ., 350 Ma[illegible]son Ave., New York 17, N.Y. (1921)
*ROSS, Howard N., 1513 Taylor Ave., New York 6[illegible] N.Y. (1952)
ROSS, James A., Jr., Hq. USAFE Wiesbaden, AF[illegible] 633, c/o Postmaster, New York, N.Y. (1926)
ROSS, Maurice O., Butler Univ., Indianapolis, In[illegible] (1933)
ROSS, Morris A., 3816 Davis Pl., N.W., Washington D.C. (1943)
ROSS, Murray, 3540 Van Ness St., N.W., Washingt[illegible] 16, D.C. (1936)
ROSS, Mylan E., 101 Forest, Park Forest, Ill. (1949
ROSS, Nathan, 1414 S. Drake Ave., Chicago 23, I[illegible] (1949)
ROSS, Seton, Cotton Trade Jour., Cotton Exch. Bld[illegible] Memphis 3, Tenn. (1952)
ROSS, William B., 79 Ridge Ave., Lawrenceburg, In[illegible] (1950)
ROSS, William D., 2634 June St., Baton Rouge, L[illegible] (1947)
ROSSETTI, Victor H., Farmers and Merchants Na[illegible] Bank, Los Angeles, Calif. (1912)
ROSTOW, Eugene V., 208 St. Ronan St., New Hav[illegible] 11, Conn. (1951)
ROSTVOLD, Gerhard N., Pomona Col., Dept. Econ., Claremont, Calif. (1952)
ROSWELL, David S., 38 Bon Air Ave., New Rochell[illegible] N.Y. (1921)
ROTAR, Peter A., 5505 Saulsbury Ct., Arvada, Col[illegible] (1951)
ROTHBARD, Murray N., 215 W. 88th St., Apt. 2[illegible] New York 24, N.Y. (1946)
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ROUSE, Robert L., Texas Tech. Col., Dept. of Eco[illegible] and Mgt., Lubbock, Tex. (1952)

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.OUZITSKY, Peter M., 3308 N St., N.W., Washington 7, D.C. (1939)
OVENSKY, John E., 30 Church St., New York 8, N.Y. (1953)
.OWE, Harold B., 412 Highland Dr., Chevy Chase, Md. (1939)
.OWE, William H., U. S. Dept. of Agric., Fed. Crops Ins. Corp., Washington, D.C. (1949)
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.OWLANDS, David T., Univ. of Pennsylvania, 211 Logan Hall, Philadelphia, Pa. (1933)
.OWTON, Raymond E., 7413 N. Damen Ave., Chicago 45, Ill. (1950)
ROZENTAL, Alek A., Univ. of Minnesota, 220 Vincent Hall, Minneapolis 14, Minn. (1950)
.OZMAN, David, Massachusetts State Col., Dept. of Econ., Amherst, Mass. (1934)
.UBEN, Robert J., Chase Nat. Bank, Econ. Res. Dept., 18 Pine St., New York 15, N.Y. (1952)
.UBENSTEIN, Harold L., 39 Richard Rd., Metuchen, N.J. (1948)
.UBENSTEIN, Irving, 718 Bayfield St., Takoma Park 12, Md. (1947)
RUBIN, Edward P., 135 S. La Salle St., Room 2240, Chicago, Ill. (1940)
RUBIN, Fred P., 1236 Pelham Pkwy. S., New York 61, N.Y. (1951)
.UBIN, Israel, 219 Grafton St., Brooklyn 12, N.Y. (1949)
.UBIN, Milton, 295 Madison Ave., New York 17, N.Y. (1947)
.UBIN, Samuel, Univ. of Southern California, University Park, Los Angeles 7, Calif. (1946)
.UCKER, T. Donald, Franklin and Marshall Col., Dept. of Econ., Lancaster, Pa. (1949)
.UDERMAN, Armand P., Int. Labour Office, Statis. Div., Route de Lausanne, Geneva, Switzerland. (1948)
.UFFLEY, Raymond F., 135 Grand Ave., Leonia, N.J. (1951)
.UGGLES, Clyde O., 321 Mt. Auburn St., Cambridge, Mass. (1911)
RUGGLES, Henry T., 2619 47th S.W., Seattle 46, Wash. (1953)
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.UGGLES, Richard, 30 Ashmun St., New Haven, Conn. (1942)
.UHMER, Otto E. M., 39 Lenox Rd., Brooklyn 26, N.Y. (1937)
.UKEYSER, Merryle S., 150 W. Pinebrook Dr., New Rochelle, N.Y. (1931)
.UNGE, Edmond J., 232 Lincoln Pl., Brooklyn 17, N.Y. (1940)
.UNKLE, Jerry C., Lamoni, Iowa. (1946)
RUNYON, Herbert R., 814 E. University, Ann Arbor, Mich. (1952)
RUSCHELL, George J., Univ. of Kentucky, Col. of Com., Bur. of Bus. Res., Lexington, Ky. (1952)
.USSAK, Milton, 970 Main St., Hackensack, N.J. (1948)
.USSELL, Archie E., Prudential Ins. Co. of Amer., Agencies Res. Div., Newark, N.J. (1951)
.USSELL, J. Johnson, III, 700 Westmont Dr., Alhambra, Calif. (1944)
.USSELL, (Mrs.) Jean D., 824 Tusculum Blvd., Greeneville, Tenn. (1952)
.USSELL, Ralph, U. S. Dept. of Int., Fish and Wildlife Service, Washington, D.C. (1942)
.USSELL, William H., 1340 E. 48th St., Chicago 15, Ill. (1948)
.UTTAN, Vernon W., TVA, Ind. Econ. Br., Knoxville, Tenn. (1949)
.UTTENBERG, Stanley H., C.I.O., 718 Jackson Pl., N.W., Washington 6, D.C. (1948)
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RYAN, John, Fordham Univ., Dept. of Econ., New York 58, N.Y. (1952)
RYBAR, Richard F., Gannon Col., Div. of Bus. Admin., Perry Sq., Erie, Pa. (1951)
RYDER, Oscar B., 5515 Center St., Chevy Chase, Md. (1922)
RYDER, Walter S., Central Michigan Col. of Educa., Mount Pleasant, Mich. (1946)
*RYNIEWICZ-WISNIEWSKI, Henryk S., 45 Trowbridge St., Cambridge, Mass. (1951)
RYSS, Murray, 33 S. Ridge Rd., Greenbelt, Md. (1949)

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SABATINO, R. A., Univ. of Rhode Island, Dept. of Econ., Kingston, R.I. (1948)
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SABGHIR, Irving H., 3625 Minnesota Ave., S.E., Washington 19, D.C. (1950)
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SACKS, Howard R., 2700 Que St., N.W., Washington, D.C. (1951)
SACKS, Seymour, Wayne Univ., Dept. of Econ., Detroit, Mich. (1946)
SADLER, George E., 6810 Fairfax Rd., Bethesda 14, Md. (1952)
SADOVE, A. Robert, 8409 Farrell Dr., Rock Creek Ter., Chevy Chase, Md. (1947)
SÁENZ, Francisco R., 1 Sickles St., Apt. D-24, New York 34, N.Y. (1946)
SAFARIAN, Albert E., 517 Golden Ave.. Ottawa, Ont., Canada. (1950)
*SAFFRAN, H. William, 388 Post Ave., Rochester 19, N.Y. (1951)
SAGAN, John, 921 N. Vernon, Dearborn, Mich. (1948)
SAHA, Jiten, Bhuapur Col., Dept. of Econ., P.O. Bhuapur, Tangail, E. Pakistan. (1951)
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SAINSBURY, Trevor, Alvern Gardens Apt., 4104 Greenridge Ave., Pittsburgh 34, Pa. (1952)
ST. MAUREEN, Sister Mary, Clarke Col., Dubuque, Iowa. (1950)
SAKOLSKI, Aaron M., 192 Columbia Heights, Brooklyn 2, N.Y. (1904)
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SALANT, Aaron B., 23 E. 74th St., New York 21, N.Y. (1934)
SALANT, Walter S., Coun. of Econ. Advisers, Exec. Office Bldg., Room 362, Washington, D.C. (1940)
SALANT, William A., 2120 16th St., N.W., Washington 9, D.C. (1945)
SALERA, Virgil, c/o Pres. Armando Tamayo, Corporacion Venezolana de Fomento, Edificio Banco Central, Caracas, Venezuela. (1935)
SALISBURY, James, Jr., 4729 29th St., S., Arlington, Va. (1949)
SALKEVER, Louis R., State Univ. of New York, State Teachers Col., New Paltz, N.Y. (1952)
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SALZ, Arthur, Ohio State Univ., Dept. of Econ., Columbus 10, Ohio. (1945)
SAMETZ, Arnold W., Princeton Univ., Dept. of Econ., Princeton, N.J. (1946)
SAMMONS, Wheeler, 536 Deming Pl., Chicago, Ill. (1935)
SAMOORE, Arthur S., 135 Westminster, Jacksonville, Ill. (1945)
SAMPSON, Roy J., Box 304, R. 1, Forest Grove, Ore. (1951)
SAMUELS, L. H., Univ. of the Witwatersrand, Milner Park, Johannesburg, S. Africa. (1949)
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SAMUELSON, Carl A., 2809 Highcrest Rd., Rockford, Ill. (1936)
SAMUELSON, Paul A., Massachusetts Inst. of Tech., Cambridge 39, Mass. (1938)
SANBORN, Henry N., 1407 Dale Dr., Silver Spring, Md. (1950)
SANCETTA, Anthony L., Col. of William and Mary, Dept. of Econ., Williamsburg, Va. (1947)
SANDALE, Arthur G., 221 Ave. F, Brooklyn 18, N.Y. (1941)

SANDELIN, G. Lincoln, 3200 16th St., N.W., Washington 10, D.C. (1943)
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SANFORD, George W., Case Inst. of Tech., Cleveland 6, Ohio. (1933)
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SAPIR, H. Michael, Trans-Pacific Consultants, Fukoku Bldg., Room 814, Uchisaiwaicho, Chiyoda-Ku, Tokyo, Japan. (1938)
SAPOSS, David J., U. S. Dept. of Labor, Bur. of Labor Statis., Washington 25, D.C. (1928)
SARAMES, George N., 3604 Greenly St., Silver Spring, Md. (1949)
SARD, Edward L., 22-46 79th St., Jackson Heights, N.Y. (1943)
SARFATY, David E., 2118 77th St., Jackson Heights, N.Y. (1948)
SARGENT, Noel, 14 W. 49th St., New York, N.Y. (1924)
SARICH, B. Robert, Marwood, Chain Bridge Rd., McLean, Va. (1949)
SARNOFF, Milton M., 398 Broadway, Monticello, N.Y. (1941)
SAROSI, Oliver, Duquesne Univ., Sch. of Bus., Dept. of Fin., 331 Fourth Ave., Pittsburgh 22, Pa. (1940)
SARRACINO, Michael A., 349 Highland Ave., Clifton, N.J. (1950)
SASS, Frederick N., 124 E. Upsal St., Philadelphia 19, Pa. (1947)
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SAUERHAFT, Sidney J., 2114 Davidson Ave., New York 53, N.Y. (1952)
SAULNIER, Raymond J., 106 Morningside Dr., Apt. 88, New York, N.Y. (1936)
SAUNDERS, George B., Jr., 114 Winchell Rd., University Heights, Syracuse, N.Y. (1949)
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SAUNDERS, Grant, 803 Cedar St., Riverton, N.J. (1951)
**SAUNDERS, Laura G. (Mrs. R. Duane), 506 Boston Ave., Takoma Park, Md. (1949)
SAUNDERS, R. Duane, 506 Boston Ave., Takoma Park, Md. (1948)
SAUNDERS, Stanley A., 12 Kendal Ave., Apt. 4, Toronto, Ont., Canada. (1931)
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SAURINO, Benedict, Sun Oil Co., 1608 Walnut St., Philadelphia, Pa. (1942)
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SAWWAF, Husni A., Ministry of Nat. Econ., Damascus, Syria. (1938)
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SAXE, Joseph, American Embassy, Paris, France. (1953)
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SAXON, Olin G., Jr., 225 Adams St., Brooklyn 1, N.Y. (1951)
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SCATTERGOOD, Margaret, McLean, Va. (1947)
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SCHATZ, Sayre P., Lincoln University, Pa. (1949)
SCHECHTER, Arthur, 3003 Ave. X, Brooklyn 35, N.[Y.] (1949)
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SCHEFFLER, Leonhardt W., 34 Lindhurst Pl., Roc[k]ville Centre, N.Y. (1952)
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SCHEINKOPF, Harold P., 1 Attorney St., New York N.Y. (1945)
SCHEINMAN, Daniel, 105 Chester Ct., Peoria, I[ll.] (1941)
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SCHELLING, Thomas C., The White House, Washin[g]ton, D.C. (1946)
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SCHENK, William E., American Embassy, San S[al]vador, Salvador. (1946)
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SCHMIDT, Emerson P., U.S. Ch. of Com., Washingt[on,] D.C. (1934)
SCHMIDT, Gerhard, 203 W. 107th St., Apt. 8B, N[ew] York 25, N.Y. (1953)
SCHMIDT, Martin F., Univ. of Colorado, Sch. of Bu[s.,] Boulder, Colo. (1949)
SCHMIDT, Orvis A., 418 Cummings Lane, Che[vy] Chase 15, Md. (1940)

Hall of Gov., Dept. of Econ., Washington, D.C. (1947)
SCHMOOKLER, Jacob, Michigan State Col., Dept. of Econ., East Lansing, Mich. (1948)
SCHMUKLER, Sidney, 23 Providence Ter., McLean, Va. (1949)
SCHNEIDER, Edward, 333 Parkland Pl., S.E., Washington 20, D.C. (1948)
SCHNEIDER, John H., Jr., 11 Hamilton St., Lynbrook, N.Y. (1944)
SCHNEIDER, Leon G., 1663 Lincoln Pl., Brooklyn, N.Y. (1946)
SCHNEIDER, Samuel, 126 Pine St., Woodmere, L.I., N.Y. (1946)
*SCHNEIDER, Theodore H., 2208 Packard Rd., Ann Arbor, Mich. (1952)
SCHNEIDER, Wilbert M., Box 166, College Place, Wash. (1946)
SCHNELLE, Kenneth E., 1201 Trout St., Norman, Okla. (1953)
SCHNICKER, Oscar C., Univ. of Detroit, Col. of Com., 16500 Prairie St., Detroit 21, Mich. (1948)
SCHOEFFLER, Sidney, Univ. of Massachusetts, North Col., Amherst, Mass. (1949)
SCHOEN, Sterling H., Washington Univ., Sch. of Bus. Admin., St. Louis 5, Mo. (1947)
SCHOENBECK, Henry, Upsala Col., East Orange, N.J. (1947)
SCHOFF, Leonard H., 51 Madison Ave., Room 3202, New York, N.Y. (1949)
SCHOLZ, Karl W. H., Univ. of Pennsylvania, Logan Hall, Philadelphia, Pa. (1921)
SCHOTT, Francis H., 45 Winter Ave., St. George, S.I., N.Y. (1950)
SCHRAG, William A., Temple Univ., Broad and Montgomery Ave., Philadelphia 22, Pa. (1940)
SCHRAGE, Robert, 1775 W. 57th St., Cleveland 2, Ohio. (1950)
SCHRAMM, John C., Lone Town Rd., Redding, Conn. (1951)
SCHRAMM, John E., 21 Seminary Ave., Yonkers 4, N.Y. (1944)
SCHRATZ, Walter A., 1413 Electric Ave., East Pittsburgh, Pa. (1949)
SCHRATZER, Alfred P., c/o Austria Touring Travel Agency, 12, Auerspergstrasse, Salzburg, Austria. (1952)
SCHROEDER, Gertrude E., 3051 Porter St., N.W., Washington 8, D.C. (1950)
SCHROEDER, Glenn A., 1821 Jackson Ave., Ann Arbor, Mich. (1949)
SCHROLL, Mother M. Alfred, Mt. St. Scholastica Col., Atchison, Kans. (1940)
SCHRUBEN, Leonard W., Kansas State Col., Dept. of Econ. and Soc., Manhattan, Kans. (1949)
SCHUCHAT, Theodor, 1020 19th St., N.W., Washington 6, D.C. (1949)
SCHULLER, George J., 1417 N St., N.W., Washington, D.C. (1939)
SCHULMAN, Albert A., 2340 N. 11th St., Apt. 102, Arlington 1, Va. (1948)
SCHULMAN, (Mrs.) Rosalind, 534 Cooper St., Camden, N.J. (1947)
SCHULTE, Sister M. Yolande, Col. of Saint Teresa, Winona, Minn. (1951)
§SCHULTZ, Arch D., Ohio Ch. of Com., 820 Huntington Bank Bldg., Columbus, Ohio. (1940)
SCHULTZ, Charles L., 41-96 Gleane St., Elmhurst, N.Y. (1949)
SCHULTZ, Robert, Brothers Col., Drew Univ., Madison, N.J. (1932)
SCHULTZ, Robert S., III, 15 Warwick Ave., Scarsdale, N.Y. (1945)
SCHULTZ, (Mrs.) Ruth S., Carnegie Inst. of Tech., Schenley Park, Pittsburgh 13, Pa. (1946)
SCHULTZ, Theodore W., Univ. of Chicago, Dept. of Econ., Chicago 37, Ill. (1940)
SCHULZ, John H. I., 201 Ridgemede Rd., Baltimore 10, Md. (1949)
SCHUMACHER, Arnold C., 604 Judson Ave., Evanston, Ill. (1941)
SCHUMANN, John J., Jr., 1775 Broadway, New York 19, N.Y. (1942)
SCHUMER, William, 18975 Hartwell, Detroit, Mich. (1947)
SCHUMPETER, (Mrs.) Elizabeth B., Taconic, Conn. (1927)
SCHUR, Leon M., 212 N. Lake St., Madison 5, Wis.
SCHURMAN, Bernard, Univ. of Rhode Island, Dept. of Econ., Kingston, R.I. (1947)
SCHURR, Sam H., 11716 College View Dr., Silver Spring, Md. (1947)
SCHUSSHEIM, Morton J., 558 E. 222nd St., Euclid 23, Ohio. (1951)
SCHUSTER, Joseph H., 1436 Meridian Pl., N.W., Apt. 8, Washington 10, D.C. (1948)
SCHUTZ, Robert R., 89 Arden Rd., Berkeley 4, Calif. (1950)
SCHWAB, Thomas J., 19 Everett St., Apt. B-2, Cambridge 38, Mass. (1949)
SCHWARTZ, Bella, 2222 Eye St., N.W., Washington 7, D.C. (1946)
SCHWARTZ, David, 3 E. Mill Dr., Apt. 2E, Great Neck, N.Y. (1942)
SCHWARTZ, Donald A., 3657 N. 12th, Milwaukee 6, Wis. (1947)
SCHWARTZ, Eli, Brown Univ., Econ. Dept., Providence, R.I. (1947)
SCHWARTZ, George, 2901 18th St., N.W., Washington, D.C. (1946)
SCHWARTZ, Harry, 709 Webster Ave., New Rochelle, N.Y. (1946)
SCHWARTZ, Maurice H., Bd. of Gov. of the Fed. Res. System, Div. of Res. and Statis., Washington 25, D.C. (1947)
SCHWARTZ, Morton J., 1906 Amherst Rd., Riggs Manor, Hyattsville, Md. (1948)
SCHWARTZ, Robert J., 416 Essex Ave., Chevy Chase, Washington 15, D.C. (1945)
*SCHWARTZ, Tobias W., 157 W. Hudson St., Long Beach, N.Y. (1953)
SCHWEIGER, Irving, Fed. Res. Bldg., Washington, D.C. (1945)
SCHWEITZER, Arthur, Indiana Univ., Bloomington, Ind. (1938)
SCHWEITZER, Morton D., 15 E. 8th St., Cincinnati 2, Ohio. (1946)
SCHWENNING, Gustav T., P.O. Box 283, Chapel Hill, N.C. (1924)
**SCHWIER, Ann S. (Mrs. Jerome F.), 18 N. Taylor, St. Louis 8, Mo. (1951)
SCHWIER, Jerome F., 18 N. Taylor, St. Louis 8, Mo. (1948)
SCITOVSKY, Tibor, Stanford Univ., Dept. of Econ., Stanford, Calif. (1949)
SCOLES, Donald, Univ. of Southern California, Col. of Com., University Park, Los Angeles 7, Calif. (1945)
SCOLL, Emanuel E., 414 E. Rosemary Lane, Falls Church, Va. (1947)
SCOTT, DR, Univ. of Missouri, Columbia, Mo. (1923)
SCOTT, Ira O., Jr., Harvard Univ., Leverett House I-23, Cambridge 38, Mass. (1948)
SCOTT, Jack G., 839 17th St., N.W., Washington 6, D.C. (1953)
SCOTT, Reginald H., Univ. of Pittsburgh, Pittsburgh, Pa. (1933)
SCOTT, William G., 6933 Crandon Ave., Chicago 49, Ill. (1952)
SCOVILL, Hiram T., Univ. of Illinois, 217 Commerce Bldg., Urbana, Ill. (1914)
SCOVILLE, John A., 166-D Colony Rd., Silver Spring, Md. (1951)
SCRIMSHAW, Stewart, 1714 N. 71st St., Wauwatosa 13, Wis. (1913)
†SCROGGS, William O., Louisiana State Univ., Room 5, Law Bldg., Baton Rouge, La. (1910)
SCUDDER, David B., 521 Knollwood Dr., Apt. 3, Falls Church, Va. (1949)
SCULLY, Charles J., 46 Sylvan Ave., Chelmsford, Mass. (1949)
SEARL, Milton F., Stanolind Oil and Gas Co., Box 591, Tulsa 2, Okla. (1952)
SEARLES, Clair K., Univ. of Toledo, Toledo 1, Ohio. (1950)
SEARLES, Ernest W., 4 E. 6th St., Cincinnati, Ohio. (1947)
SEASTONE, Don A., 4303 N. Pershing Dr., Apt. 1, Arlington, Va. (1952)
SEAY, Edward W., Centenary Junior Col., Hackettstown, N.J. (1946)
SEBBA, Gregor, Univ. of Georgia, Athens, Ga. (1948)
*SECORD, Donald S., 349 Briar Hill Ave., Toronto 12, Ont., Canada. (1952)
SEELYE, Alfred L., Univ. of Texas, 15 Waggener Hall, Austin, Tex. (1942)
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SEGAL, Harvey H., Apt. 5D, Beech Spring Dr., Summit, N.J. (1947)
SEGAL, Melvin J., Michigan State Col., Basic Col., Dept of Soc. Sci., East Lansing, Mich. (1934)
SEGAL, Paul M., 2800 S. 9th St., Arlington, Va. (1952)
SEGAL, Robert M., 22 Tennyson Rd., West Newton 65, Mass. (1946)
SEIBERT, Joseph C., Miami Univ., Oxford, Ohio. (1941)
SEIDEL, Eugene M., 520 S. Jordan Ave., Bloomington, Ind. (1950)
SEIDL, Julius C. G., 266 W. 23rd St., New York 11, N.Y. (1940)
SEIDLER, Gustav, 8 E. Irving St., Chevy Chase, Md. (1935)
SEIDMAN, Joel, 7248 S. Maryland Ave., Chicago 19, Ill. (1939)
*SEILER, Stuart, 160 Gordonhurst Rd., Apt. L32, Upper Montclair, N.J. (1951)
SELBERT, (Mrs.) Frida F., 10525 Carnegie Ave., Cleveland. Ohio. (1937)
SELDEN, Richard T., Vanderbilt Univ., Box 14, Nashville 5, Tenn. (1948)
SELEKMAN, Ben M., Harvard Univ., Grad. Sch. of Bus. Admin., Soldiers Field, Boston 63, Mass. (1926)
*SELIGMAN, Barnard, 387 Garden St., Hartford, Conn. (1952)
SELIGMAN, Ben B., 40 B Georgian Ct., Foster Village, Bergenfield, N.J. (1941)
SELIGMAN, Harold L., c/o Palestine Econ. Corp., P.O.B. 722, Tel-Aviv, Israel. (1949)
SELIGMANN, Otto H., 64-14 184th St., Flushing, N.Y. (1948)
SELIGSON, Harry, Univ. of Denver, Denver, Colo. (1951)
SELKO, Daniel T., The Eifion, Criccieth, Caernarvonshire, Wales. (1929)
SELTZER, Arthur O., 2800 Quebec St., N.W., Washington 8, D.C. (1948)
SELTZER, George O., 106 Martha's Rd., Alexandria, Va. (1941)
*SELTZER, Irving, 7826 Argus Rd., Philadelphia 19, Pa. (1952)
SELTZER, Lawrence H., Wayne Univ., 5050 Cass Ave., Room 556, Detroit 2, Mich. (1921)
SENESH, Lawrence, Jt. Coun. on Econ. Educa., 444 Madison Ave., New York, N.Y. (1947)
SENIOR, Clarence, 15 Claremont Ave., New York 27, N.Y. (1945)
SENN, Peter R., 4561 S. Woodlawn, Chicago 15, Ill. (1948)
SENTURIA, Joseph J., 5617 30th St., N.W., Washington 15, D.C. (1946)
SEPMEIER, Kurt A., P.O. Box 71A, Valparaiso, Fla. (1947)
SEQUIN, C. Joseph, St. Lawrence Univ., Dept. of Econ., Canton, N.Y. (1951)
SERGEANT, John C., 1355 Queen's Rd., Berkeley 8, Calif. (1950)
SERRANO, Enrique E., Banco Nacional de Cuba, Cuba y Lamparilla, Havana, Cuba. (1942)
SETHUR, Frederick, 651 E. 14th St., New York 9, N.Y. (1943)
SETON, Theodore R., c/o MLPFB, 70 Pine St., New York 5, N.Y. (1946)
SEVERO, (Mrs.) Edith G., 42 Bank St., New York 14, N.Y. (1946)
SEVERSON, Harry L., 2801 16th Rd., S., Arlington, Va. (1946)
SEVIN, Charles H., 1400 Van Buren St., N.W., Washington 12, D.C. (1946)
*SEWELL, Wade P., 6103 Kimbark, Chicago 37, Ill. (1953)
SEYBOLD, John W., 40 Amherst Ave., Swarthmore, Pa. (1941)
SEYMOUR, Charles W., Jr., 2238 Vallejo St., San Francisco 23, Calif. (1951)
SEYMOUR, Helen V., 17 Grenfell Dr., Great Neck, L.I., N.Y. (1943)
SEYMOUR, Robert G., Univ. of Illinois, 408 David Kinley Hall, Urbana, Ill. (1948)
SHACKLETON, L. Allan, 156 First Ave., Ottawa, Ont., Canada. (1949)
*SHADECK, Thomas L., 2551 17th St., N.W., Apt. 306, Washington 9, D.C. (1952)
SHAFEI, Mohamed Z., 12 St. Genis St., Moustapha.

SHAFER, Joseph E., Box 345, Durham, N.H. (1929)
SHAFER, Nelson C., Jr., Univ. of Connecticut, Sch. Bus., Storrs, Conn. (1953)
*SHAFFER, Edward H., 807 S. State St., Ann Arbo Mich. (1952)
SHAFFER, Harry G., P.O. Box 2803, University, Al (1948)
*SHAFFER, Jack N., 1006 S. 6th St., Champaign, I (1951)
SHAFFNER, Felix I., 1616 16th St., N.W., Washingt 9, D.C. (1941)
SHAHAN, Ewing P., Vanderbilt Univ., Box 60, Calhou Hall, Nashville 4, Tenn. (1941)
SHALLCROSS, Ruth, Lake Shore Dr. at Elm S Madison, Ohio. (1946)
SHAM, Donald, 1908 Florida Ave., N.W., Washingt 9, D.C. (1944)
*SHANNON, Richard E., 1814 N. High St., Columb 1, Ohio. (1950)
SHANNON, Brother Robert L., St. Mary's Col., Winon Minn. (1948)
*SHAPIRO, David, 2677 Colby Ct., Brooklyn 23, N. (1952)
SHAPIRO, Edward, 2495 W. Boston Blvd., Detroit Mich. (1944)
SHAPIRO, Harold A., Arkansas State Teachers Co Conway, Ark. (1946)
SHAPIRO, Howard S., 550 W. 180th St., New York 3 N.Y. (1949)
SHAPIRO, Louis A., 333 Sylvan Lane, Westbury, L. N.Y. (1946)
SHAPIRO, Milton, 18 Bridge St., Naugatuck, Con (1947)
SHAPIRO, Milton M., 100 Woodruff Ave., Apt. 4 Brooklyn 26, N.Y. (1947)
SHAPIRO, Sherman, 5111 Benning Rd., S.E., Was ington 19, D.C. (1948)
SHAPIRO, Solomon, 6816 Laverock Ct., Bethesd Md. (1939)
*SHAPIRO, Solomon, 95 Stuyvesant Ave., Brookl 21, N.Y. (1950)
†SHARFMAN, I. L., Univ. of Michigan, Ann Arbo Mich. (1914)
SHARFMAN, Norman, 137 Newton Ave., Worcest Mass. (1946)
SHARFMAN, Saul, 150 Grove St., Worcester, Ma (1945)
SHARFSTEIN, Phoebe, 2075 62nd St., Brooklyn N.Y. (1952)
SHARIF, Mohammad Raihan, 62 Farashganj, Dac East Pakistan. (1953)
SHARKEY, William K., Purdue Univ., Dept. of Eco West Lafayette, Ind. (1947)
SHARP, Ansel M., Louisiana State Univ., Sch. of Cor Econ. Dept., Baton Rouge, La. (1950)
SHARP, Luther, Great Nat. Life Bldg., Dallas, Te (1941)
SHARPE, Howard D., Jr., 57 Charles St., New Yo 14, N.Y. (1949)
SHATTUCK, Leroy A., Jr., 361 Hazel Dr., Pittsbur 28, Pa. (1942)
SHAVELL, Henry, 8915 Whitney St., Silver Sprin Md. (1948)
SHAVIRO, (Mrs.) Frieda W., 550 Grand St., New Yo 2, N.Y. (1950)
SHAW, A. W., 105 S. La Salle St., Room 3714, Chica 3, Ill. (1910)
SHAW, Edward S., Stanford Univ., Dept. of Eco Stanford, Calif. (1942)
SHAW, Ernest R., Lionel D. Edie and Co., 20 Exchan Pl., New York, N.Y. (1922)
SHAW, Everett R., 112 Irvington St., S.W., Washin ton, D.C. (1949)
SHAW, Fayette B., De Paul Univ., 64 E. Lake S Room 1100, Chicago 1, Ill. (1940)
SHAW, Harry F. R., 301 Reed Hall, Hanover, N. (1925)
SHAW, Milton E., Iowa Wesleyan Col., Mt. Pleasa Iowa. (1949)
SHAW, W. Lawrence, 295 Keats Circle, Walnut Cre Calif. (1945)
SHAW, William F., 1115 Peyton Randolph Dr., Fa Church P.O., Fairfax Co., Va. (1949)
SHAW, William H., Pine Ridge, Box 208, R. 2, Fa fax, Va. (1940)
SHAWVER, Donald L., Univ. of Missouri, 104 B. a P.A. Bldg., Columbia, Mo. (1951)
SHAY, Robert P., Univ. of Maine, 52 Stevens Hall

HEA, J. Whitney, Houghton Col., Houghton, N.Y. (1938)
HEA, John L., Canisius Col. Lib., 2001 Main St., Buffalo 8, N.Y. (1940)
HEAHAN, John B., MSA/OSR Program Div., 2 rue St. Florentin, Paris 1, France. (1949)
HEARER, Warren W., Wabash Col., Crawfordsville, Ind. (1940)
SHEEHAN, James G., 115 Tower Pl., Fort Thomas, Ky. (1952)
HEEHAN, John H., 425 Marquette Ave., South Bend 17, Ind. (1939)
HEFTEL, Harry B., 5813 Third Pl., N.W., Washington 11, D.C. (1947)
HEFVELAND, O. E., 219 Manitou, Northfield, Minn. (1943)
HEIFER, Victor J., 34 Monroe St., New York 2, N.Y. (1948)
SHEINBAUM, Stanley K., 530 Melville Ave., Palo Alto, Calif. (1953)
HEINWOLD, Philip, 89-19 217th St., Queens Village, N.Y. (1948)
HELTON, Henry W., Box 48, La Jolla, Calif. (1916)
HELTON, William C., EC Div MSA/E, 2 rue St. Florentin, Paris 1, France. (1946)
HEN, Walter Yuen-Whan, 995A Merchandise Mart, Chicago 54, Ill. (1951)
HENEFIELD, Hale T., c/o American Embassy, Santiago, Chile. (1941)
HEPARD, Dwight C., Jr., 2473 Edgerton Rd., Cleveland 18, Ohio. (1947)
HEPARD, E. Fenton, 4618 N. 14th St., Arlington, Va. (1940)
HEPARD, John F., 1427 Bay View Blvd., Norfolk, Va. (1948)
HEPHERD, Geoffrey S., Iowa State Col., Dept. of Agric. Econ., Ames, Iowa. (1931)
HEPHERD, George C., Jr., SRE/DNAP, APO 58, c/o Postmaster, New York, N.Y. (1948)
HEPPARD, C. Stewart, New York Univ., 90 Trinity Pl., New York 6, N.Y. (1945)
HEPPARD, Ernest J., 535 Hayes St., West Lafayette, Ind. (1926)
HERE, Louis, Indiana Univ., Dept. of Econ., Bloomington, Ind. (1945)
HERMAN, Joseph M., 2928 Nelson Pl., S.E., Washington 19, D.C. (1949)
HERMAN, Richard U., Jr., Manor Park, R. 2, Rockville, Md. (1951)
HERMAN, William E., Hillsdale Col., Hillsdale, Mich. (1923)
HERR, Harry, 315 Livingston Ter., S.E., Washington 20, D.C. (1943)
HERRARD, Alfred, 418 S. Lee St., Alexandria, Va. (1942)
SHERRARD, Edith H. (Mrs. Alfred), 418 S. Lee St., Alexandria, Va. (1948)
HERRINGTON, Charles E. R., Byways, Queens Rd., Belmont, Surrey, England. (1923)
SHERRY, John C., 67 Stuart St., Waldwick, N.J. (1949)
HERWIN, Douglas S., RFC, Office of Synthetic Rubber Plant Opera. Div., 811 Vermont Ave., N.W., Washington, D.C. (1951)
HERWIN, Samuel R., 1552½ Juneway Ter., Chicago 26, Ill. (1950)
HIELDS, D. Murray, Bank of the Manhattan Co., 40 Wall St., New York, N.Y. (1925)
HIELDS, Harald G., 222 N. Western Ave., Carpentersville, Ill. (1946)
HIELDS, Murray W., Univ. of Florida, 204 Bldg. D, Gainesville, Fla. (1946)
HIELDS, Thomas K., 4830 S. 27th Rd., Arlington, Va. (1940)
HIH, Ko Ching, 2824 E. Van Norman Ave., Cudahy, Wis. (1952)
HILLINGLAW, Gordon, 237 N. Broadway, Apt. 5B, Yonkers 3, N.Y. (1952)
HINN, Glenn L., 3726 Connecticut Ave., N.W., Washington 8, D.C. (1948)
HIPMAN, Samuel S., 123 W. 74th St., New York 23, N.Y. (1948)
HIPMAN, William D., 774 Forest Ave., Glen Ellyn, Ill. (1949)
HIPMAN, Zola R., 40-55 69th St., Woodside 77, N.Y. (1950)
HIRLEY, David, 2315 Portland St., Los Angeles 7, Calif. (1949)
SHIRLEY, Robert V., J-1 Prince Georges Apt., 3900 Hamilton St., Hayattsville, Md. (1942)
SHIRRAS, G. Findlay, Univ. of Illinois, 102 David Kinley Hall, Urbana, Ill. (1952)
SHIRVEN, Maynard N., J-5 Hq. FEC, APO 500, c/o Postmaster, San Francisco, Calif. (1941)
SHISKIN, Julius, 8920 Whitney St., Silver Spring, Md. (1937)
SHISTER, Joseph, Univ. of Buffalo, Sch. of Bus. Admin., Buffalo, N.Y. (1945)
SHLAKMAN, Vera, 195 Hicks St., Brooklyn 2, N.Y. (1938)
SHLIFER, Eleanor, 5306 University Ave., Chicago 15, Ill. (1948)
SHOHAN, Leo B., 520 E. 90th St., New York 28, N.Y. (1948)
SHONE, R. M., British Iron and Steel Federation, Steel House, Tothill St., London, S.W. 1, England. (1952)
SHOR, Judith J., 2222 Eye St., N.W., Washington 7, D.C. (1948)
SHOR, Max, 6106 Madison St., Riverdale, Md. (1947)
SHOR, Ruth J., Univ. of Oslo, Dept. of Econ., Oslo, Norway. (1952)
SHORTER, Fred C., c/o Wayne D. Hudson, 320 42nd Ave., San Mateo, Calif. (1952)
SHOUP, Carl S., Columbia Univ., Sch. of Bus., New York 27, N.Y. (1925)
SHUCHMAN, Abraham, Univ. of Delaware, Dept. of Econ., Newark, Del. (1950)
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SHULMAN, Mary H. (Mrs. Robert B.), 3245 Baylis, Ann Arbor, Mich. (1948)
**SHULMAN, Robert B., 3245 Baylis, Ann Arbor, Mich. (1950)
SHULOFF, Emil H., 1078 St. Johns Pl., Brooklyn, N.Y. (1944)
SHULTZ, George P., Red Acre Rd., South Acton, Mass. (1949)
¶SHUMAN, Ronald B., Univ. of Oklahoma, Dept. of Bus. Mgt., Norman, Okla. (1929)
SHURBERG, Merwin, 810 Gordon Ave., Brilyn Park, Falls Church, Va. (1943)
*SHURTLEFF, Helen L., 2659 Lombard St., Apt. 205, San Francisco 23, Calif. (1952)
SHUTE, John, 1650 Harvard St., N.W., Washington 9, D.C. (1943)
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SIBSON, Robert E., 127 W. 15th St., New York 11, N.Y. (1950)
SIEFKIN, Gordon, Sch. of Bus. Admin., Emory University, Ga. (1946)
SIEGEL, Harriet S., Fed. Res. Bank, Res. Dept., Chicago 90, Ill. (1952)
SIEGEL, Irving H., Twentieth Century Fund, 711 14th St., N.W., Washington 5, D.C. (1941)
SIEGELMAN, Louis, Cornell Univ., Dept. of Econ., Ithaca, N.Y. (1948)
SIELAFF, Richard O., 2115 Sussex Ave., Duluth 3, Minn. (1946)
SIELAFF, Theodore J., Macalester Col., St. Paul 5, Minn. (1953)
SIENKIEWICZ, Casimir A., 202 E. Court St., Doylestown, Pa. (1936)
SIEVERS, Allen M., 2480 16th St., N.W., Apt. 239, Washington, D.C. (1945)
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SIGEL, Stanley J., Fed. Res. Bd., Room 2249, 20th and Constitution Ave., Washington 25, D.C. (1948)
SIKES, Earl R., Dartmouth Col., Hanover, N.H. (1925)
SILANDER, Fred S., 704½ 1st Ave., Montgomery, W.Va. (1952)
SILBERMAN, Charles E., 116 Lenox Rd., Baldwin, N.Y. (1947)
SILVANIE, Haig, 4538 Maryland Ave., St. Louis 8, Mo. (1943)
**SILVANIE, Sarah R. (Mrs. Haig), 4538 Maryland Ave., St. Louis 8, Mo. (1943)
SILVERIO VEGEGA, Carlos, Ave. de Mayo 651, Buenos Aires, Argentina. (1952)
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SILVERSTEIN, (Mrs.) Ethel B., 21-04 202nd St., Bayside 60, Queens, N.Y. (1945)

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SILVERSTRAND, Clarence F., 1805 N. Quebec St., Arlington, Va. (1937)
SIM, Herbert E., Butler Univ., Dept. of Bus. Admin., Indianapolis 7, Ind. (1949)
SIMHA, S. L. N., Res. Bank of India, Dept. of Res. and Statis., P.O. 1036, Bombay 1, India. (1950)
SIMKIN, Rubin, 73 Kilbarry Crescent, Manor Park Village, Ottawa, Ont., Canada. (1950)
SIMLER, Norman J., Col. of St. Thomas, Dept. of Econ., St. Paul 1, Minn. (1951)
SIMMONS, Carroll D., First Nat. Bank in Houston, Houston 1, Tex. (1927)
SIMMONS, Edward C., Duke Univ., Dept. of Econ., Durham, N.C. (1936)
SIMMONS, James C., 18 9th St., N.E., Apt. 406, Washington 2, D.C. (1951)
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SIMON, Matthew, 2831 Exterior St., Bronx, New York, N.Y. (1949)
SIMON, S. Fanny, 1160 Cromwell Ave., New York, N.Y. (1935)
SIMONDS, Rollin H., 410 Kedzie Dr., East Lansing, Mich. (1941)
SIMPSON, Elizabeth T., 2510 Clarendon Rd., Brooklyn 26, N.Y. (1947)
SIMPSON, Floyd R. O., Los Angeles State Col., Los Angeles 27, Calif. (1933)
SIMPSON, James R., 610 Orchard St., Cranford, N.J. (1949)
SIMPSON, John W., 9 S. Summit St., Ypsilanti, Mich. (1946)
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SIMPSON, William B., 2828 N.E. 30th Ave., Portland 12, Ore. (1946)
SINCLAIR, Sol, 426 Niagara St., Winnipeg, Man., Canada. (1944)
SINGER, H. W., Econ. Stabil. and Dev. Div., United Nations, N.Y. (1951)
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SINGH, Amrit Dhari, Shital Bhawan, Patna 6, Bihar, India. (1948)
SINN, Melvin E., 4364 N. Pershing Dr., Apt. 4, Arlington, Va. (1949)
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SITTON, Gordon R., U.C. Col. of Agric., Dept. of Agric. Econ., Davis, Calif. (1949)
SIVARD, Ruth L. (Mrs. Robert), SRE, American Embassy, Paris, France. (1947)
SJOBERG, Arne, Sturegatan 35, Sundbyberg, Sweden. (1946)
SKALA, Hugo M., Atlanta Univ., Atlanta, Ga. (1950)
SKEOCH, Lawrence A., 122 Justice Bldg., Ottawa, Ont., Canada. (1944)
SKERRETT, William H. W., Jr., Wayne, Pa. (1949)
SKINNER, Gordon S., 919 University Ave., Madison, Wis. (1950)
SKINNER, Josephine, Life Ins. Asso. of Amer., 488 Madison Ave., New York 6, N.Y. (1947)
SKINNER, Macy M., 122 Newcastle St., Rehoboth Beach, Del. (1921)
SKOW, Norman P., 4616 Edgefield Rd., Bethesda, Md. (1947)
SKRALY, Emile B., 12 Oswego St., Utica 4, N.Y. (1950)
SLACUM, Albert B., 120 High St., Cambridge, Md. (1945)
§SLADE, Helen, 400 E. 57th St., New York, N.Y. (1923)
*SLADE, Joseph E., 1601 N. 16th St., Apt. 4, Arlington, Va. (1951)
*SLADE, Robert C., 271 Northampton Rd., Amherst, Mass. (1953)
SLANINGER, Ernest W., 3201 Bryker Dr., Austi Tex. (1949)
SLATER, Charles C., 540 Hinman Ave., Evans Ill. (1950)
SLATER, David W., Queen's Univ., Kingston, C Canada. (1949)
SLATER, J. E., Coverdale and Colpitts, 120 Wall New York, N.Y. (1925)
SLAVICK, Fred, Princeton Univ., Ind. Rela. Sec., Box 248, Princeton, N.J. (1950)
SLAVIN, Richard H., Staff Trng., U. S. Army, Sch., Bldg. 115-A, Ft. Benjamin Harrison, Ind. (1
SLESINGER, Reuben E., 6636 Wilkins Ave., Pi burgh 17, Pa. (1947)
SLICHTER, Sumner H., Harvard Univ., 229 Litt Center, Cambridge 38, Mass. (1920)
SLITOR, Richard E., 5428 Lincoln St., Bethesda Md. (1945)
SLOAN, Virginia B., 8902 Manchester Rd., Apt. Silver Spring, Md. (1940)
SMALL, Albert H., 7119 Braeburn Pl., Bethesda Md. (1947)
SMALL, Joseph T., Paine, Webber, Jackson & Cu 25 Broad St., New York 4, N.Y. (1936)
**SMALL, Sylvia S. (Mrs. Albert H.), 7119 Braeb Pl., Bethesda 14, Md. (1947)
SMALLEY, Orange A., 1725 N. Prospect Ave., 405, Milwaukee 2, Wis. (1953)
SMART, L. Edwin, 410 King Ave., Columbus 1, O (1923)
SMELKER, Mary W. (Mrs. Merlin), 220 Prospect Chevy Chase 15, Md. (1947)
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SMELSER, David P., Procter and Gamble Co., cinnati, Ohio. (1925)
SMELTZER, Roy C., 522 Vine St., Shreveport, (1950)
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SMIGEL, Stanley E., 13305 Ardennes Ave., T Brook, Rockville, Md. (1944)
SMILAND, Mitchell M., USAF Inst. of Tech., Wri Patterson AFB, Ohio. (1952)
SMIT, Jan E. G., 143 Groot-Hertoginnelaan, Hague, Holland. (1951)
SMITH, A. Frederick, 1613 Harvard St., N.W., W ington, D.C. (1952)
SMITH, A. Howard, Robbins & Myers, Inc., C Res. Dept., Springfield 99, Ohio. (1942)
SMITH, Alfred G., Jr., Univ. of South Carolina, D of Econ., Columbia, S.C. (1941)
SMITH, Arthur A., First Nat. Bank, Dallas, (1939)
SMITH, Arthur L., 165 Woodruff Ave., Brooklyn N.Y. (1948)
SMITH, Bernard J., 3600 Beverly Dr., Dallas 5, (1946)
SMITH, Bradford B., 7 Heathcote Rd., Scarsdale, (1924)
SMITH, Caleb A., Brown Univ., Dept. of E Providence, R.I. (1948)
SMITH, Carl L., R. 2, Clinton, Ohio. (1942)
SMITH, Cecil N., Univ. of Florida, Dept. of A Econ., Gainesville, Fla. (1948)
SMITH, Charles A., Jr., Box 82, Mt. Sinai, L.I., (1951)
SMITH, Charles W., 1810 Park Ave., Baltimore Md. (1936)
SMITH, Dan T., Morgan Hall, Soldiers Field, Bo 63, Mass. (1928)
SMITH, David K., 81 Weybridge St., Middlebury, (1951)
SMITH, Douglas B., 1918 Merrimac Dr., Adelphi Hyattsville, Md. (1947)
SMITH, Earl L., 32 Cavanaugh Rd., Wellesley, M (1939)
SMITH, Edmund A., 1118 Stanfield, South Bend Ind. (1946)
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SMITH, Edward L., 676 Riverside Dr., New Y N.Y. (1925)
SMITH, Elmer L., 1042 Merydith St., Kent, ((1944)

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MITH, G. Ralph, State Univ. of New York, Harpur Col., Endicott, N.Y. (1948)
MITH, George A., Jr., Harvard Univ., Grad. Sch. of Bus. Admin., Boston 63, Mass. (1941)
MITH, George C., Jr., U. S. Ch. of Com., 1615 H St., N.W., Washington 6, D.C. (1948)
MITH, Gilbert N., 502 W. Elm St., River Falls, Wis. (1950)
MITH, Glen R., 1110 W. North St., Decatur, Ill. (1946)
MITH, Harlan M., Univ. of Minnesota, Sch. of Bus. Admin., Minneapolis 14, Minn. (1942)
MITH, Hartley L. H., 138 Cassidy Pl., New Brighton, S.I., N.Y. (1921)
MITH, Hayden W., Stanford Univ., Dept. of Econ., Stanford, Calif. (1950)
MITH, (Mrs.) Helen M., 50035 Huron River Dr., Belleville, Mich. (1947)
MITH, Heman H., Detroit Inst. of Tech., Dept. of Econ., 303 Y.M.C.A. Bldg., Detroit 26, Mich. (1949)
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MITH, J. Bond, Jr., 68 Bank St., New York 14, N.Y. (1944)
MITH, Jay L., Whirlpool Corp., Clyde, Ohio. (1950)
MITH, John H., 6110 14th St., N.W., Washington 11, D.C. (1946)
MITH, Joseph E., Youngstown Col., Youngstown, Ohio. (1927)
MITH, Kenneth R., American Consulate Gen., APO 154, c/o Postmaster, New York, N.Y. (1951)
MITH, Lawrence, 88 Leighton Rd., Wellesley, Mass. (1923)
MITH, Lucius, 511 John St., N.W., Atlanta, Ga. (1934)
MITH, Nelson L., 2480 16th St., N.W., Washington 9, D.C. (1924)
MITH, Newlin R., Tufts Col., Dept. of Econ., Medford 55, Mass. (1934)
MITH, Paul E., 3580 Brown St., San Diego 10, Calif. (1953)
MITH, Paul F., 5504 Glenwood Rd., Bethesda, Md. (1944)
MITH, Philip M., Central Michigan Col., Faculty Box 31, Mt. Pleasant, Mich. (1942)
MITH, Pierre R., Elyria Savings Bldg., Elyria, Ohio. (1930)
MITH, R. Elberton, 5429 24th St., N., Arlington, Va. (1939)
MITH, Robert E., Bigelow Bldg., Room 200, 4th and Pike, Seattle 1, Wash. (1950)
MITH, Robert H., 307 Audrey Lane, Glass Manor, Washington 20, D.C. (1951)
MITH, Robert S., 6008 Col. Sta., Durham, N.C. (1935)
MITH, Roy J., Univ. of California, Div. of Agric. Econ., Los Angeles 24, Calif. (1939)
MITH, Saul I., 167 Lenox Rd., Brooklyn 26, N.Y. (1951)
MITH, Stewart J., 2107 Suitland Ter., Apt. 201, Washington 20, D.C. (1949)
MITH, Theodore H., Montana State Univ., Sch. of Bus. Admin., Missoula, Mont. (1944)
MITH, Tucker P., 107 McLean, Highland Park 3, Mich. (1947)
MITH, Tynan, 305 Cameron Rd., Wellington, Alexandria, Va. (1943)
MITH, Victor E., Michigan State Col., Dept. of Econ., East Lansing, Mich. (1937)
MITH, Virginia B., 2635 Hillegass, Berkeley 4, Calif. (1953)
MITH, Walter B., Claremont Men's Col., Claremont, Calif. (1925)
MITH, Wendell R., 209 University Hall, Iowa City, Iowa. (1940)
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MITH, William H., Jr., 114 Sansome St., San Francisco, Calif. (1948)
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MITHIES, Arthur, Harvard Univ., Dept. of Econ., Cambridge, Mass. (1945)
MULL, (Mrs.) Cecile G., 3113 N St., N.W., Washington 7, D.C. (1948)
SMYTHE, Limen T., South Dakota State Col., Agric. Econ. Dept., Brookings, S.D. (1940)
SMYTHE, (Mrs.) Mabel M., 2225 Fifth Ave., New York, N.Y. (1952)
SNAVELY, Tipton R., Monroe Hill, University, Va. (1918)
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SNELL, Hampton K., Univ. of Texas, Col. of Bus. Admin., Austin 12, Tex. (1940)
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SNIDER, J. Douglas, Indiana Univ., Sch. of Bus., Dept. of Mgt., Bloomington, Ind. (1950)
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SOLTERER, Josef, 518 Meridian Ave., Arlington 13, Va. (1932)
SOLTIS, Charles, Norwich Univ., Dept. of Bus. Admin. and Econ., Northfield, Vt. (1952)
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SORIANO, Eduardo L., China Banking Corp., Dasmarinas St., Manila, Philippines. (1952)
SORKIN, (Mrs.) Cylvia A., 7576 Clayton Rd., St. Louis 7, Mo. (1941)
SORRELL, Vernon G., 229 N. Dartmouth, Albuquerque, N.M. (1926)
SOSNOVY, T., 74 York St., Apt. 27, New Haven, Conn. (1951)
SOUDEK, Josef, 900 West End Ave., New York, N.Y. (1939)
SOUKUP, Gervase J., St. John's Univ., Collegeville, Minn. (1951)
SOULE, George, Bennington Col., Bennington, Vt. (1942)
SOUPIOS, A. V., Hq. Bn., 2nd Marine Div., Camp Le Jeune, N.C. (1948)
SOUTHARD, Frank A., Jr., Int. Monetary Fund, 1818 H St., N.W., Washington 25, D.C. (1927)
SOUTHWORTH, Constant, 4000 Cathedral Ave., Washington, D.C. (1938)
SOUTHWORTH, Shirley D., 701 Powell St., Williamsburg, Va. (1921)
SPAFFORD, William F., Farnam Lane, Brunswick Rd., Troy, N.Y. (1925)
SPAHR, Walter E., 8 Michigan Rd., Bellerose, L.I., N.Y. (1920)
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SPANG, Kenneth M., Yale Club, Box 150, 44th St. and Vanderbilt Ave., New York 17, N.Y. (1937)
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SPARKS, Frank H., Crawfordsville, Ind. (1936)
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SPEAGLE, Richard E., 56 Harrison St., Princeton, N.J. (1946)
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SPEAR, James E., Valdosta State Col., Valdosta, Ga. (1949)
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SPENCE, Ernest J., 166 Lytton Blvd., Toronto, Ont., Canada. (1947)
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SPENCER, Francis A., 233 N. Harvey, Oak Park, Ill. (1939)
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SPENCER, Myron J., 812 Mitchell Ave., Cincinnati 29, Ohio. (1940)
SPENGLER, Edwin H., 114-28 177th St., St. Albans, N.Y. (1928)
SPENGLER, Joseph J., Duke Univ., Durham, N.C. (1928)
SPERLING, Celia, 5950 14th St., N.W., Apt. 106, Washington, D.C. (1943)
SPETH, Conrad W., 681 Victoria Ct., San Leandro, Calif. (1947)
SPIEGEL, David K., 390 Riverside Dr., Apt. 13G, New York 25, N.Y. (1940)
SPIEGEL, Harold R., 12 Hawthorne Ave., Port Washington, N.Y. (1942)
SPIEGEL, Henry W., Catholic Univ. of America, Dept. of Econ., Washington, D.C. (1938)
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SPITZ, (Mrs.) Ruth S., 5568 Morning St., Worthingt Ohio. (1949)
SPITZE, Robert G. F., Univ. of Tennessee, Dept. Agric. Econ., Knoxville, Tenn. (1951)
SPITZER, Emil G., 4631 49th St., N.W., Washingt 16, D.C. (1944)
SPLAWN, Walter M. W., ICC, Washington, D (1944)
SPOFFORD, Gavin P., 33-35 81st St., Jacks Heights, N.Y. (1951)
SPRIEGEL, William R., Univ. of Texas, Wagge Hall, Room 123, Austin 12, Tex. (1937)
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SPULBER, Nicolas, 145 Pinckney St., Boston 14, Ma (1950)
SPURR, William A., Stanford Univ., Grad. Sch. of B Stanford, Calif. (1938)
SPURRIER, Leo, 212 W. Minnesota Ave., De La Fla. (1925)
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STAATS, Elmer B., Exec. Office of the Pres., Bur. the Budget, Washington, D.C. (1945)
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STAMPOLIS, Anthony, Boston Univ., Sch. of P Rela. and Com., 84 Exeter St., Boston, Mass. (194
STANFIELD, Boris M., Columbia Univ., Hamil Hall, New York 27, N.Y. (1934)
STANG, Sister M. Blandina, Aquinas Col., Gr Rapids, Mich. (1943)
STANLEY, Carl R., 512½ First St., Menasha, V (1950)
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**STANLEY, Marjorie T. (Mrs. John D.), 600 E. St., Bloomington, Ind. (1951)
STANTON, Francis X., 3221 W. Allegheny Ave., Ph delphia 32, Pa. (1952)
STANTON, Thomas M., 1137 Maplecrest Cir Gladwyne, Pa. (1949)
STARK, John R., 3517 Hilltop Pl., Falls Church, (1951)
STARK, Walter R., Loomis, Sayles & Co., 140 Fed St., Boston 10, Mass. (1920)
STARKWEATHER, Louis P., 931 Oakwood Pl., Pl field, N.J. (1934)
STARLIGHT, Lawrence L., 3221 Fillmore Ave., Bro lyn 34, N.Y. (1952)
STARNES, George T., Box 1301, Univ. Sta., Ch lottesville, Va. (1924)
STARTZ, Arthur, Milton St. and Emerson Ave., Ha dale, N.Y. (1949)
STAUBUS, George J., Univ. of California, Sch. of B Admin., Berkeley 4, Calif. (1947)
STAUDINGER, Hans, Inst. of World Affairs, 66 F Ave., New York, N.Y. (1936)
STAUS, Harold O., c/o Allen Staus, Cavalier, N (1950)
STAUSS, James H., Grinnell Col., Dept. of Ec Grinnell, Iowa. (1941)
STEAD, Gordon W., 85 Riverdale Ave., Ottawa, O Canada. (1948)
STEAD, William H., Nat. Sec. Res. Bd., Exec. Of Bldg., Washington 25, D.C. (1951)
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STECKER, Margaret L., 1703 New York Ave., N. Washington, D.C. (1917)
STEELE, Elroy J., Kansas Wesleyan Univ., Sali Kans. (1952)
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[T]EINER, William H., 325 Riverside Dr., Apt. 121, New York, N.Y. (1916)
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[S]TEPHANSON, Earl M., Unit 4-F, Badger, Wis. (1952)
[S]TERBA, Richard L. A., 5317 S. University Ave., Chicago, Ill. (1952)
[T]ERN, Alfred W., Drake Tower, 179 Lake Shore Dr., Chicago, Ill. (1920)
[T]ERN, Carl, Randolph-Macon Woman's Col., Econ. Dept., Lynchburg, Va. (1952)
[T]ERN, Ernest H., 95, Gresham St., London, E.C. 2, England. (1946)
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[S]TEVENS, George D., 917 E. Wellington St., Flint 3, Mich. (1941)
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[S]TEVENS, W. Mackenzie, 8 Wiltshire Ct., Westlake, San Francisco 25, Calif. (1926)
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STINE, O. C., Shepherdstown, W.Va. (1945)
STINEBOWER, Leroy D., 30 Rockefeller Plaza, Room 2523, New York 20, N.Y. (1933)
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STOCKING, George W., Vanderbilt Univ., Dept. of Econ., Nashville, Tenn. (1923)
STOCKLER, Morton I., 3281 Pasadena, Detroit 6, Mich. (1952)
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STOCKTON, John R., Univ. of Texas, Col. of Bus. Admin., Austin 12, Tex. (1940)
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STOKES, Charles J., Old Common Rd., Lancaster, Mass. (1948)
STOKES, Milton L., Gettysburg Col., Gettysburg, Pa. (1934)
STOLNITZ, George J., 413A Butler Ave., Princeton, N.J. (1947)
STOLPER, Wolfgang F., Univ. of Michigan, Dept. of Econ., Ann Arbor, Mich. (1940)
STOLTENBERG, C. H., Duke Univ., Sch. of Forestry, Durham, N.C. (1953)
STOLTZ, Merton P., Brown Univ., Providence, R.I. (1948)
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STONE, J. L., Arkansas A. and M. Col., Dept. of Econ. and Soc., Monticello, Ark. (1945)
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STRAIN, Robert E., I.S.T.C., Soc. Sci. Dept., Cedar Falls, Iowa. (1947)
STRANGE, Robert H., Scudder, Stevens and Clark, 10 Post Office Sq., Boston, Mass. (1942)
STRANTZ, Maurice K., 3761 El Ricon, Sacramento 21, Calif. (1950)
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STRAYER, Paul J., Princeton Univ., Dept. of Econ., Princeton, N.J. (1935)
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STYKOLT, Stefan, Univ. of Toronto, Inst. of Bus. Admin., 273 Bloor St. W., Toronto, Ont., Canada (1952)
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SZUCS-NICOLSON, Miklos, Univ. Sta., P.O. Box 2271, Enid, Okla. (1948)

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TANDY, W. Lou, Allen Univ., Columbia, S.C. (1932)
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TAYLOR, Albion G., Col. of William and Mary, Williamsburg, Va. (1928)
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TAYLOR, George W., 1900 Rittenhouse Sq., Philadelphia 3, Pa. (1934)
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TAYLOR, Irving H., Jr., 3020 Edwin Ave., Apt. 5-F, Fort Lee, N.J. (1949)
TAYLOR, James S., 2800 Foxhall Rd., Washington 7, D.C. (1945)
TAYLOR, Maurice F. W., U. S. Treas. Rep., U. S. Embassy, Brussels, Belgium. (1947)
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TAYLOR, Wayne C., 2224 Decatur Pl., Washington, D.C. (1943)
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TEAF, Howard M., Jr., 3 College Lane, Haverford, Pa. (1935)
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TOULAN, Saleh I., Statistical Dept., Cairo, Egypt. (1948)
TOUSLEY, Rayburn D., State Col. of Washington, Sch. of Bus. Admin., Pullman, Wash. (1938)
TOW, Clarence W., Fed. Res. Bank, Kansas City 18, Mo. (1936)
TOWER, Ralph B., 525 Grant Ave., Morgantown, W.Va. (1925)
TOWLE, Joseph W., Northwestern Univ., Lunt 111, Evanston, Ill. (1947)
TOWLE, Lawrence W., 11 Riggs Ave., West Hartford 7, Conn. (1932)
TOWLES, John K., 45 Pinehurst Ave., New York 33, N.Y. (1910)
TOWNE, Marvin W., 3130 Wisconsin Ave., N.W., Washington 16, D.C. (1952)
TOWNSEND, David, Louisiana State Univ., Col. of Com., Baton Rouge, La. (1950)
TOWNSEND, Mary D., 60 Warren Pl., Montclair, N.J. (1949)
¶TOWNSEND, Roswell G., 527 Lincoln Way, E., Chambersburg, Pa. (1946)
TOWSEND, Julius J., 3712 Oakmont Ave., Baltimore 15, Md. (1946)
TRABER, Oscar W., Jr., USMA, Dept. of Soc. Sci., West Point, N.Y. (1952)
TRACEY, Minnie B., Louisiana Poly. Tech. Inst., Sch. of Bus., Ruston, La. (1947)
TRACY, Myles A., East Los Angeles Junior Col., 5357 E. Brooklyn Ave., Los Angeles 22, Calif. (1949)
TRACY, Truman G., Univ. of Missouri, B. and P.A. Bldg., Columbia, Mo. (1947)
TRAFTON, George E., 5422 Sagra Rd., Baltimore 12, Md. (1926)
TRANT, James B., University, La. (1923)
*TRAVIS, Katherine J., 1836 Keyes Ave., Madison 5, Wis. (1952)
TRAVIS, Robert W., Univ. of Florida, Box 27, Bldg. D, Gainesville, Fla. (1953)
¶TRAYLOR, Orba F., Special ECA Mission to Greece, APO 206, c/o Postmaster, New York, N.Y. (1944)
TRAYWICK, Leland E., Michigan State Col., Dept. of Econ., East Lansing, Mich. (1941)
TRBOVICH, Alexander, Downtown Y.M.C.A., 715 S. Hope St., Room 735, Los Angeles 17, Calif. (1950)
TREANOR, Glen R., 8718 Milford Ave., Silver Spring, Md. (1949)
TREBELLAS, John P., 4 Forestdale Pk., Calumet City, Ill. (1949)
TREBING, Harry M., 6912 Bellona Ave., Baltimore 12, Md. (1951)
TREDWELL, Thomas A., 16 Crows Nest Rd., Bronxville, N.Y. (1942)
TREFFTZS, Kenneth L., 5402 Weatherford Dr., Los Angeles 56, Calif. (1939)
TRELAWNY, Arthur W., 226 Euclid Ave., Syracuse 10, N.Y. (1951)
TRENCHARD, George O., Firestone Tire & Rubber Co., Akron 17, Ohio. (1945)
TREND, Harry G., 3702 Edison, Detroit 6, Mich. (1947)
TRENTON, Rudolph W., Oklahoma A. and M. Col., Sch. of Com., Dept. of Econ., Stillwater, Okla. (1948)
TRESPASZ, Walter R., 141-40 84th Dr., Briarwood 35, L.I., N.Y. (1952)
TREUENFELS, Rudolf L., 140 Bay Ridge Pkwy., Brooklyn 9, N.Y. (1939)
TREZISE, Philip H., 6900 Broxburn Dr., Bethesda 14, Md. (1950)
TRIANTIS, S., Univ. of Toronto, 273 Bloor St. W., Toronto, Ont., Canada. (1947)
TRIAS-FARGAS, Raymond, Rambla de Cataluna No. 47, Barcelona, Spain. (1948)
TRIFFIN, Robert, 97 Loomis Pl., New Haven, Conn. (1953)
TRIMAKAS, Anthony, 195 Kosciusko St., Brooklyn 16, N.Y. (1951)
*TRIMBLE, Bernard H., St. Vincent Col., Box 192, Latrobe, Pa. (1952)
*TRINKL, Frank H., 1433 University Terraces, Ann Arbor, Mich. (1952)
TRINKLEY, Raymond W., 849 Park Ave., Bridgeport 4, Conn. (1951)
TRIPP, L. Reed, 1014 Beloit Ct., Shorewood Hills, Madison 5, Wis. (1935)
TROLLE, Ulf af, Edinsvägen 35, Uddevalla, Stockholm, Sweden. (1948)
TRONE, Curvin J., Jr., 533 Crofton Ave., Apt. 2, Oakland 10, Calif. (1952)
TROSPER, Joseph F., Univ. of Tennessee, Sch. of Bus., Knoxville, Tenn. (1948)
TROUTMAN, Warren T., 207 Coshocton Ave., Mt. Vernon, Ohio. (1949)
TROXEL, C. Emery, 1667 Burlingame, Detroit 6, Mich. (1936)
TROXELL, John P., Stanford Univ., Ind. Rela. Div., Stanford, Calif. (1929)
TROY, Leo, 3657 Broadway, New York 31, N.Y. (1953)
TRUEBLOOD, Lyle R., 1569 Agate St., Eugene, Ore. (1950)
†TRUESDELL, Leon E., 3429 Ordway St., N.W., Washington, D.C. (1920)
TRUITT, Gray, 815 Front St., Hempstead, L.I., N.Y. (1939)
TRUMBO, Mark, Aurora Col., Aurora, Ill. (1952)
TRUMBOWER, Henry R., Univ. of Wisconsin, Madison 6, Wis. (1905)
TRUMBULL, Wendell P., Box 162, University, Miss. (1942)
TRUPIN, Aaron, 35 Niblock Ct., Danker Village, Albany 5, N.Y. (1947)
TSAO, Linda Wen-Mei, Int. House, Box 773, 500 Riverside Dr., New York 27, N.Y. (1952)
TSEN-CHA, Tsao, 891 Belle Ave., Teaneck, N.J. (1950)
TSIANG, S. C., 8105 Tahona Dr., Silver Spring, Md. (1949)
TSURU, Shigeto, Tokyo Univ. of Com., Kunitachi, Tokyo, Japan. (1949)
TUCHMAN, Joseph M., 7944 W. Beach Dr., N.W., Washington 12, D.C. (1946)
TUCKER, Donald S., Massachusetts Inst. of Tech., Cambridge, Mass. (1912)
TUCKER, Morrison G., Liberty Nat. Bank and Trust Co., Oklahoma City, Okla. (1941)
TUCKER, Robert H., 1030 W. Franklin St., Richmond 20, Va. (1912)
TUCKER, Rufus S., 843 Bradford Ave., Westfield, N.J. (1912)
*TUETING, Robert C., 6575 Bridgetown Rd., Cincinnati, Ohio. (1952)
TUGMAN, James L., 2399 Edgerton Rd., University Heights, Cleveland 18, Ohio. (1945)
**TUGMAN, Mrs. James L., 2399 Edgerton Rd., University Heights, Cleveland 18, Ohio. (1951)
TUGWELL, Rexford G., Univ. of Chicago, Soc. Sci. Res. Bldg., Chicago 37, Ill. (1921)
TULASIEWICZ, Bruno J., P.O. Box 91, Olivet, Mich. (1949)
TURLEY, Joseph F., 132 Homes Ave., Boston 22, Mass. (1950)
TURNBULL, John G., Univ. of Minnesota, Ind. Rela. Center, Minneapolis 14, Minn. (1943)
TURNER, Clarence L., 1622 Chestnut St., Philadelphia, Pa. (1942)
TURNER, Glen C., Colorado State Col. of Educa., Dept. of Bus. and Fin., Greeley, Colo. (1949)
TURNER, Robert C., Indiana Univ., Sch. of Bus., Bloomington, Ind. (1935)

TURNEY, M. Clark, 919 N. Cross St., Wheaton, Ill. (1935)
TURRELL, Virginia, East Hunting Towers, Alexandria, Va. (1946)
TUTHILL, John W., HICOG, Box 800, APO 80, c/o Postmaster, New York, N.Y. (1938)
TUTTLE, Alva M., 5155 Cleveland Ave., Columbus 11, Ohio. (1944)
TUTTLE, Frank W., Univ. of Florida, Bldg. G, Gainesville, Fla. (1922)
TUTTLE, Pierson M., Short Hills, N.J. (1915)
TYBOUT, Richard A., Univ. of Michigan, Dept. of Econ., Ann Arbor, Mich. (1951)
TYLER, Edward J., Jr., Harper & Bros., 49 E. 33rd St., New York 16, N.Y. (1946)
TYNDALL, D. G., Carnegie Inst. of Tech., Dept. of Econ., Pittsburgh 13, Pa. (1947)
TYNER, Lyle L., Jamestown Col., Jamestown, N.D. (1948)
TYSON, Francis, Univ. of Pittsburgh, Pittsburgh, Pa. (1918)
TYSON, Leonard S., 2501 N. Granada St., Arlington, Va. (1942)

UDIS, Bernard, Unit No. 87, 218-C Marshall St., Princeton, N.J. (1950)
UHLINGER, Charles W., 31 Princeton St., Rockville Centre, N.Y. (1950)
UHR, Carl G., 3563 Jackson St., San Francisco 18, Calif. (1944)
ULE, G. Maxwell, 5 Loch Lane, Port Chester, N.Y. (1940)
ULLIAN, Frieda S., 35 Dolphin Rd., Newton Centre 59, Mass. (1938)
ULLMAN, Adolph, 588 Commonwealth Ave., Boston, Mass. (1938)
ULLRICH, Francis J., 84-33 164th St., Jamaica 2, N.Y. (1947)
ULMAN, Lloyd, Univ. of Minnesota, 314 Vincent Hall, Minneapolis 14, Minn. (1949)
ULMER, Carl D., Stoltz Rd., Box 184, R.D. 2, Library, Pa. (1926)
ULMER, Melville J., 6605 Little Falls Rd., Arlington, Va. (1940)
ULREY, Ivon W., 9148 N. State Rd., Westerville, Ohio. (1941)
UMBACH, John C., Whitewater, Kans. (1950)
UMBREIT, Myron H., 2111 Ridge Ave., Evanston, Ill. (1928)
UMEMURA, George M., Indiana Univ., Sch. of Bus., Bloomington, Ind. (1949)
UMSTOTT, Haven D., 4264 S. 35th St., Arlington 6, Va. (1942)
UNDERHILL, H. Fabian, 518 N. Delaware St., Indianapolis 4, Ind. (1946)
UNSTAD, Lyder K. L., 620 Gist Ave., Silver Spring, Md. (1934)
UNTERBERGER, S. Herbert, 5413 Wyndale Ave., Philadelphia 31, Pa. (1935)
UPGREN, Arthur R., Inst. of Econ., Aarhus, Denmark. (1932)
UPHAM, Cyril B., Minneapolis Athletic Club, Minneapolis 2, Minn. (1931)
UPTON, R. Miller, 7045 Pershing St., University City, Mo. (1938)
URI, George, Irelan and Uri, 41 Sutter St., San Francisco 4, Calif. (1948)
URQUIDI, Victor L., Comision Economica para America Latina, Apartado Postal 20376, Mexico, D.F. (1950)
URSELL, (Mrs.) Lucile C., 4125 Garrison St., N.W., Washington 16, D.C. (1948)
USHER, Abbott P., 37 Chestnut St., Salem, Mass. (1911)
USHER, Thomas H., 18045 Ferguson Ave., Detroit 19, Mich. (1947)

VAIL, Robert P., Montgomery Pl., Decatur, Ill. (1940)
VAILE, Roland S., Univ. of Minnesota, Minneapolis 14, Minn. (1924)
VALAURI, Fadra T. (Mrs. Christy), 500 W. 190th St., New York 33, N.Y. (1946)
*VALAVANIS-VAIL, Stefan, Univ. of Michigan, Dept. of Econ., Ann Arbor, Mich. (1952)
VALENCIA CARDENAS, José, Edificio "Sud-America," Segundo Piso, Plaza San Martin, Lima, Peru. (1943)
VALENTINE, Roger W., Halsey, Stuart and Co., 123 S. La Salle St., Chicago 90, Ill. (1924)

VALGREN, Victor N., 2947 Macomb St., N.W., Washington 8, D.C. (1910)
Van ARSDELL, Paul M., Univ. of Illinois, 211 David Kinley Hall, Urbana, Ill. (1934)
VANCE, Lawrence L., Univ. of California, Sch. of Bu Admin., Berkeley 4, Calif. (1942)
VANCE, Rupert B., Univ. of North Carolina, Chap Hill, N.C. (1951)
Van DAHM, Thomas E., 801 University, Pella, Iow (1951)
VANDENHAAG, Ernest, 58 Morton St., New York 1 N.Y. (1946)
VANDERMEULEN, Alice J. (Mrs. Daniel C.), 69 Los Tilos Rd., Los Angeles 28, Calif. (1943)
**VANDERMEULEN, Daniel C., 6970 Los Tilos Rd Los Angeles 28, Calif. (1948)
Van DEWATER, John, 304 Bliss Dr., Urbana, I (1948)
Van de WOESTYNE, Royal S., 5428 Woodlawn, Ap 2D, Chicago, Ill. (1922)
Van Horn, Edna, Oregon State Col., Sch. of Hon Econ., Corvallis, Ore. (1944)
VANIER, Guy, 57 St. James St. W., Montreal, Que Canada. (1946)
†Van KLEECK, Mary, Byrdcliffe Rd., Box 68, Woodstock, N.Y. (1916)
Van METRE, Ralph M., 25½ W. Madison St., Springfield, Ohio. (1948)
*Van NIMWEGEN, Leonard, 108 Essex Ave., Gl Ridge, N.J. (1953)
VANO, Frederick, 226 W. 21st St., New York 11, N. (1948)
*Van ORDEN, Richard M., 2469 Westboro Dr., N.E Grand Rapids, Mich. (1953)
Van SANT, Edward R., 3106 Old Dominion Blv Alexandria, Va. (1930)
Van SANTEN, Fred, Sarphatikade 20, Amsterdam Holland. (1950)
Van SCOYOC, Leland S., Bowling Green State Univ Dept. of Econ., Bowling Green, Ohio. (1946)
Van SICKLE, John V., Wabash Col., Dept. of Econ Crawfordsville, Ind. (1924)
Van SYCKLE, Calla, Washington State Col., Col. Home Econ., Pullman, Wash. (1942)
Van TASSEL, Roger C., Brown Univ., Robinson Ha Providence 12, R.I. (1948)
Van TOOR, J. E., 14 Sutton Pl., S., New York 22, N. (1933)
*Van VLACK, Philip W., 62 E. 92nd St., New York 2 N.Y. (1951)
Van VOORHIS, Robert H., P.O. Box 426, Universit Ala. (1940)
Van WINKLE, Edward H., Rensselaer Poly. Ins Troy, N.Y. (1935)
VARGO, Julius J., 24560 Lake Shore Blvd., Euclid 2 Ohio. (1951)
*VARMA, Ranbir, 30 W. 90th, New York 24, N. (1952)
VASCONCELLOS, Antonid S., P.O. Box 953, Lourenc Marques, Mozambique, Portuguese E. Africa. (194
VASQUEZ, Humberto, Calle 3 No. 607, Bogot Colombia. (1952)
VATTER, Harold G., Champlain Col., Dept. of Eco Plattsburgh, N.Y. (1944)
VATTER, William J., 8447 Constance Ave., Chica Ill. (1941)
VAUGHAN, Ernest H., 505 W. 14th St., Austin 1, Te (1952)
VAUGHAN, Floyd L., Univ. of Oklahoma, Norma Okla. (1947)
VAUGHAN, Olive E., Nat. Ind. Conf. Bd., 247 Pa Ave., New York, N.Y. (1952)
VAUGHN, James A., 232 North Rd., Bedford, Ma (1943)
*VAUGHN, Quentin R., Box 714, Col. Sta., Pullma Wash. (1951)
VEATCH, Roy, 3100 Dumbarton Ave., N.W., Was ington 7, D.C. (1940)
VEGUILLAS, Manuel J., c/o China Banking Cor For. Dept., Dasmarinas, Manila, Philippines. (195
VENSTROM, Cruz, 935 Oxford St., Berkeley 7, Cal (1931)
*VERA, Fernando A., 2734 Ordway St., N.W., Was ington 8, D.C. (1951)
VERBESSELT, Jacques A., 151 Ave. de la Faiencer Luxembourg City, Luxembourg. (1951)
VERGARA, José, 6327 Meadow Lane, Chevy Cha Washington 15, D.C. (1948)

VERNOFF, Samuel, 3510 B St., S.E., Apt. 204, Washington 19, D.C. (1948)
VERNON, Raymond, 5717 First St., S., Arlington, Va. (1947)
VESTAL, Grace (Mrs. E. F.), c/o American Embassy, Amman, Jordan, c/o Dept. of State, Washington 25, D.C. (1952)
VETTERLING, Philip W., 2819-B S. Abingdon St., Arlington 6, Va. (1948)
VIAU, Sister Joseph M., Marymount Col., Salina, Kans. (1938)
VICKERS, Enoch H., 820 College Ave., Morgantown, W.Va. (1902)
¶VICKREY, William S., 552 Riverside Dr., Apt. 6A, New York 27, N.Y. (1936)
VICTORIANO, Procopio B., Univ. of the Philippines, Col. of Bus. Admin., Diliman, Quezon City, Philippines. (1947)
VICTORIUS, J. Curt, Dept. of Econ., Guilford College, N.C. (1950)
VIEHMAN, Robert C., 3110 9th St., N., Arlington, Va. (1952)
VIJANDRE, Maximiliano, Dulawan Cotabato, Mindanao Island, Philippines. (1949)
VILLARD, Henry H., 170 E. 93rd St., New York 28, N.Y. (1935)
VILLASENOR, Eduardo, 2a. Privada Frontera No. 14, Villa Alvaro Obregon, Mexico, D.F. (1927)
VINCENT, Warren H., Michigan State Col., 26 Agric. Hall, East Lansing, Mich. (1952)
VINER, Edward A., R.D. 1, Box 188, Keyport, N.J. (1947)
VINER, Jacob, Princeton Univ., Dept. of Econ., 227 Dickinson Hall, Princeton, N.J. (1920)
VINING, Rutledge, Univ. of Virginia, Charlottesville, Va. (1937)
VISCASILLAS, Felipe S., Apartado 45, U.P.R., Rio Piedras, P.R. (1949)
VITOLO, John L., 1932 Hone Ave., Bronx, New York 61, N.Y. (1946)
VIVAS, Jorge B., Cullen 5584, Buenos Aires, Argentina. (1948)
VIZZARD, James L., Georgetown Univ., Washington, D.C. (1949)
VLEESCHHOUWER, J. E., Rotterdam Post Authority, Stieltjesstraat 27, Rotterdam, Holland. (1949)
VOERTMAN, Robert F., Michigan State Col., Econ. Dept., East Lansing, Mich. (1951)
VOGEL F., Santo José, 18 E. 10th St., New York, N.Y. (1952)
VOGELY, William A., 3400 Tulane Dr., West Hyattsville, Md. (1947)
von BECKERATH, Herbert, Duke Sta., Durham, N.C. (1934)
von CIRIACY-WANTRUP, Siegfried, Univ. of California, 207 Giannini Hall, Berkeley, Calif. (1940)
Von FRANK, George O., 3 N. Helderberg Pkwy., Slingerlands, N.Y. (1949)
Von HAUNALTER, Eberhart, 211 E. 71st St., New York, N.Y. (1943)
von MERING, Otto O., 48 Sparks St., Cambridge, Mass. (1941)
VOORHEES, Manning W., 394 Henderson Ave., S.I. 10, New York, N.Y. (1952)
VOORHIES, Edwin C., Univ. of California, Col. of Agric., Berkeley, Calif. (1925)
VOSS, Donald H., Box 63, Wyckoff, N.J. (1948)
VOSS, Wellington J., 439 Ingraham St., N.W., Washington 11, D.C. (1943)
VOUTILAINEN, Jouko J., ECE, Res. and Plann. Div., Palais des Nations, Geneva, Switzerland. (1949)
VUKASIN, Peter N., KTA Engineering Co., Gen. P.O. Box 1484, Rangoon, Burma. (1949)

WACHTEL, Sidney B., Treas. Dept., Office of Int. Fin., Washington, D.C. (1942)
WAGNER, Irving, 39-43 50th St., Woodside 77, N.Y. (1952)
*WAGNER, Lewis E., 810 Finkbine Pk., Iowa City, Iowa. (1951)
WAGNER, Martin, 723 S. 44th St., Louisville, Ky. (1939)
*WAGNER, Walter C., Drake Univ., P.O. Box 82, Des Moines, Iowa. (1953)
WAINGER, Jack, 3221 Livingston St., N.W., Washington 15, D.C. (1950)
¶WAINIO, Weijo W., Int. Monetary Fund, 1818 H St., N.W., Washington, D.C. (1951)
WAIT, William B., Univ. of Southern California, Col. of Com., Los Angeles, Calif. (1947)
WALD, Haskell P., 6409 Oakridge Ave., Chevy Chase, Md. (1942)
WALES, Hugh G., Univ. of Illinois, Col. of Com., Urbana, Ill. (1936)
WALINSKY, Louis J., 3745 Kanawha St., N.W., Washington, D.C. (1944)
*WALKER, (Mrs.) Caroline, 2430 Pennsylvania Ave., N.W., Apt. 704, Washington 7, D.C. (1952)
WALKER, Charls E., Fed. Res. Bank, Philadelphia, Pa. (1947)
WALKER, Claude, Univ. of Hawaii, Hawaii Hall, Honolulu, Hawaii. (1949)
WALKER, Dilworth, Univ. of Utah, Salt Lake City, Utah. (1937)
WALKER, Dilworth H., Continental Can Co., 100 E. 42nd St., New York 17, N.Y. (1952)
WALKER, George R., 120 Boylston St., Boston, Mass. (1947)
WALKER, John E., 631 Tower Bldg., 14th and K Sts., N.W., Washington, D.C. (1921)
WALKER, John R., 43-01 Westmoreland Ave., Little Neck, L.I., N.Y. (1947)
§WALKER, Mabel L., Tax Inst., 457 Nassau St., Princeton, N.J. (1928)
WALKER, Pinkney C., Univ. of Missouri, 101 B.P.A., Columbia, Mo. (1946)
WALKER, Q. Forrest, 157 Highland Ave., Montclair, N.J. (1937)
WALL, Norman J., U.S. Dept. of Agric., Bur. of Agric. Econ., Washington, D.C. (1936)
WALLACE, Donald H., 120 FitzRandolph Rd., Princeton, N.J. (1928)
WALLACE, Edward L., Univ. of Buffalo, Sch. of Bus. Admin., Buffalo, N.Y. (1952)
WALLACE, Elbert S., Millsaps Col., Jackson, Miss. (1941)
WALLACE, Irving H., Pennsylvania State Col., Dept. of Econ. and Com., State College, Pa. (1949)
WALLACE, J. Roger, 11 McKinley St., Bronxville, N.Y. (1947)
WALLACE, Malcolm E., Jonco Aircraft Corp., P.O. Box 72, Dept. of Ind. Rela., Shawnee, Okla. (1951)
WALLACE, Phyllis A., 1932 Walbrook Ave., Baltimore 17, Md. (1948)
WALLACE, Raymond F., Univ. of Mississippi, Sch. of Com. and Bus. Admin., University, Miss. (1947)
WALLACE, Robert F., State Col. of Washington, Sch. of Econ. and Bus., Pullman, Wash. (1950)
WALLER, James M., A. and M. Col. of Texas, Dept. of Econ., College Station, Tex. (1949)
WALLERSTEIN, L. B., Univ. of Minnesota, P.O. 15092, Minneapolis, Minn. (1950)
WALLICH, Henry C., 88 Cold Spring St., New Haven, Conn. (1946)
WALLIN, James R., State Teachers Col., Eau Claire, Wis. (1946)
WALLIS, W. Allen, Univ. of Chicago, Sch. of Bus., Chicago 37, Ill. (1942)
WALPIN, Bernard G., 64-51 214th St., Bayside, Queens, N.Y. (1951)
WALSH, Charles J., Fordham Univ., Grad. Sch. of Arts and Sci., New York 58, N.Y. (1937)
WALSH, Floyd E., 2869 California St., Omaha, Neb. (1942)
WALSH, Joan P., 225 E. 163rd St., New York 56, N.Y. (1952)
WALTER, Edwin J., 375 Park Ave., New York 22, N.Y. (1917)
WALTER, James E., Duke Univ., Dept. of Econ., Durham, N.C. (1949)
WALTER, John T., 48 Graham Ave., Metuchen, N.J. (1946)
WALTER, Theodore, 105 Roswell Ct., N.E., Atlanta, Ga. (1949)
WALTERS, Elvin W., 6213 Queens Chapel Rd., Hyattsville, Md. (1951)
WALTERSDORF, Maurice C., 212 N. Wade Ave., Washington, Pa. (1925)
WALTON, Scott D., 4009 42nd Ave., S., Minneapolis 6, Minn. (1949)
WANDEL, William H., 1960 Berkshire Rd., Columbus, Ohio. (1929)
*WANG, Chi-Tsu, 1208 W. California, Urbana, Ill. (1952)
WANG, Nian-Tzu, 405 W. 118th St., New York 27, N.Y. (1950)

WAPLES, Eliot O., Midland Mtge. Co., 312 3rd St., S.E., Cedar Rapids, Iowa. (1942)
**WARBURTON, Amber A. (Mrs. Clark A.), McLean, Va. (1941)
WARBURTON, Clark A., McLean, Va. (1922)
WARD, F. Bernard, 4041 N. Downer Ave., Shorewood 11, Wis. (1948)
WARD, Frank B., 302 Forest Hills Blvd., Knoxville 16, Tenn. (1924)
WARD, James E., Jr., George Peabody Col. for Teachers, Nashville 4, Tenn. (1934)
WARDWELL, Allen, 15 Broad St., New York, N.Y. (1912)
WARDWELL, Charles A. R., 312 Little Falls St., Falls Church, Va. (1929)
WARK, Robert, c/o Banner Cross Hall, Sheffield 11, England. (1946)
WARNE, Clinton, Univ. of Kansas, 22 Strong Hall, Lawrence, Kans. (1952)
WARNE, Colston E., Amherst Col., Amherst, Mass. (1948)
WARNER, Aaron W., 498 Engle St., Englewood, N.J. (1947)
WARNER, Adolphe J., 657 W. 161st St., New York 32, N.Y. (1947)
WARNER, Arthur E., Indiana Univ., Sch. of Bus., Bloomington, Ind. (1951)
WARNER, Donald A., 550 Summit Ave., Oradell, N.J. (1946)
§WARNER, Philip J., 15 E. 26th St., New York 10, N.Y. (1911)
WARNER, Robert K., University Club, Washington, D.C. (1932)
WARNING, Donald S., 633 East Ave., Park Ridge, Ill. (1946)
¶WARREN, David M., Panhandle Herald, Box 428, Panhandle, Tex. (1944)
WARREN, Edgar L., Univ. of California, Inst. of Ind. Rela., Los Angeles 24, Calif. (1943)
WARREN, Forest G., 216 Lawton St., Falls Church, Va. (1943)
WARREN, Gerald E., Tulane Univ., Col. of Com., New Orleans 15, La. (1943)
WARRINGTON, William E., 110 Dietrich Hall, 3614 Locust St., Philadelphia 4, Pa. (1935)
WARSHOW, H. T., Nat. Lead Co., 111 Broadway, New York 6, N.Y. (1945)
WARTERS, Dennis N., c/o Bankers Life Co., Des Moines, Iowa. (1934)
WASHBURN, Horace H., Univ. of Alabama, Sch. of Com. and Bus. Admin., University, Ala. (1944)
WASON, James R., 1241 Valley Ave., S.E., Washington 20, D.C. (1952)
WASSERMAN, Max J., 1422 Longfellow St., N.W., Washington 11, D.C. (1946)
WASSERMAN, William, Syracuse Univ., Bus. and Econ. Res. Center, Slocum Hall, Syracuse 10, N.Y. (1951)
WASSON, Robert C., 10 Bolling Rd., Tauxemont, Alexandria, Va. (1941)
WATERS, Lawrence L., Indiana Univ., Sch. of Bus., Bloomington, Ind. (1937)
WATERS, Leland R., Jr., Harding Col., Box 592, Searcy, Ark. (1951)
WATERS, R. Hadly, Pennsylvania State Col., State College, Pa. (1938)
WATERS, William R., 928 E. 61st St., Chicago 37, Ill. (1943)
WATERS, Wray R., 3944 8th St., S., St. Petersburg, Fla. (1949)
WATERSTON, Albert, 3916 Southern Ave., S.E., Washington 20, D.C. (1947)
WATKINS, Cameron D., 604 Van Buren St., N.W., Washington 12, D.C. (1946)
WATKINS, Gordon S., Univ. of California, Riverside, Calif. (1917)
WATKINS, John B., 2420 Harrison St., Evanston, Ill. (1925)
WATKINS, Leonard L., Univ. of Michigan, Dept. of Econ., Ann Arbor, Mich. (1922)
WATKINS, Myron W., R.F.D. 1, Stamford, Conn. (1915)
WATKINS, Ralph J., 200 E. 66th St., New York 21, N.Y. (1923)
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WATSON, Donald S., George Washington Univ[.], Washington, D.C. (1939)
WATSON, Dorothy E., Wells Col., Aurora, N.Y. (194[...])
WATSON, Edward T., Northwestern Univ., Sch. [of] Com., Evanston, Ill. (1949)
WATSON, Elliott O., 508 N. Church St., Fayett[e] Mo. (1948)
WATSON, Jesse P., Univ. of Pittsburgh, Bur. of Bu[s.] Res., Pittsburgh, Pa. (1929)
WATSON, Merrill A., 14 Westminster Rd., Summi[t] N.J. (1936)
WATTEL, Harold L., 17 Rainbow Lane, Levittow[n] N.Y. (1946)
WATTLES, Marshall D., Univ. of Oregon, Dept. [of] Econ., Eugene, Ore. (1949)
WATTS, V. Orval, 1185 E. Foothill Blvd., Altaden[a] Calif. (1937)
WAUGH, Albert E., Univ. of Connecticut, Storrs, Con[n.] (1928)
WAUGH, Frederick V., U. S. Dept. of Agric., Bur. Agric. Econ., Washington 25, D.C. (1948)
WAYNE, Bernard W., c/o Ford, 7028 S. Stoney Isla[nd] Ave., Chicago 49, Ill. (1952)
WEATHERFORD, Willis D., Swarthmore Col., Eco[n.] Dept., Swarthmore, Pa. (1948)
WEAVER, Donald V., 2570 Blanca St., Vancouver B.C., Canada. (1929)
WEAVER, Findley, American Embassy, 1 Grosven[or] Sq., London, W. 1, England. (1944)
WEAVER, Robert N., 4624 Brewer Pl., N.W., Was[h]ington 7, D.C. (1949)
*WEBB, Jack C., 5608 S. Blackstone Ave., Chicago 3[7] Ill. (1948)
WEBB, John N., Box 193, Melrose, Fla. (1949)
WEBB, William Y., 3614 Warren St., N.W., Washingt[on] 8, D.C. (1944)
WEBBER, William R., 20 S. Seventh St., Lewisbur[g] Pa. (1951)
WEBBINK, Paul, 17 Cohawney Rd., Scarsdale, N.[Y.] (1939)
**WEBBINK, Gladys F. (Mrs. Paul), 17 Cohawn[ey] Rd., Scarsdale, N.Y. (1946)
WEBER, Adna F., 8521 114th St., Richmond Hill 1[8,] L.I., N.Y. (1896)
WEBER, C. Jerome, P.O. Box 63, Chappaqua, N.[Y.] (1946)
WEBER, Herbert J., 7210 Jeffery Ave., Chicago 4[9,] Ill. (1945)
WEBER, Karl R., 2929 Montezuma Ave., Alhamb[ra] Calif. (1951)
WEBER, Paul J., Hercules Powder Co., Delawa[re] Trust Bldg., Wilmington, Del. (1930)
WEBER, Willett F., 327 S. La Salle St., Chicago Ill. (1949)
WEBSTER, John E., 1428 Ferris Dr., Orlando, F[la.] (1949)
WECKSTEIN, Richard S., 220 Congress St., Brookly[n] N.Y. (1948)
WEDDEL, Bernard L., 4007 Grace St., East Chica[go] Ind. (1950)
WEED, John B., 192 Nassau St., Princeton, N.J. (195[...])
WEEKS, Dale H., Nebraska Wesleyan Univ., Linco[ln] Neb. (1945)
WEHRWEIN, Carl F., 4250 N. 25th St., Arlington Va. (1936)
WEIDENHAMMER, R. M., 3000 39th St., N.[W.] Apt. 611, Washington 16, D.C. (1942)
WEIFENBACH, Annette, 2218 Parnell Ave., L[os] Angeles 64, Calif. (1949)
WEIL, Felix J., 533 Spoleto Dr., Santa Monica, Ca[lif.] (1943)
WEIL, Leonard, 1228½ N. Ogden Dr., Los Angeles 4[6] Calif. (1952)
WEIL, Rolf A., Roosevelt Col., 430 S. Michigan Av[e.] Chicago 5, Ill. (1943)
WEILER, Berthold, 310 W. 80th St., New York [24] N.Y. (1952)
WEILER, Emanuel T., 705 S. Busey, Urbana, I[ll.] (1945)
WEILER, Ralph E., Willow Springs, Mo. (1950)
**WEILER, Valerie D. (Mrs. Berthold), 310 W. 8[0th] St., New York 24, N.Y. (1952)
WEIMER, A. M., Indiana Univ., Bloomington, In[d.] (1946)
WEIN, Harold H., 3490 La Sombra Dr., Hollywo[od] Calif. (1945)

WEINBERG, Edgar, 1400 S. Edgewood St., Apt. 526, Arlington, Va. (1948)
WEINBERG, Nat, U.A.W.-C.I.O., Res. and Eng. Dept., 8000 E. Jefferson Ave., Detroit 14, Mich. (1943)
WEINBERG, Norman, 6024 8th St., N.W., Washington 11, D.C. (1949)
WEINBERG, Robert S., A02233854, Box 4933, Hq. Air Mat. Com., Wright Patterson AFB, Dayton, Ohio. (1949)
WEINER, Clarence M., U.A.W.-C.I.O., Res. Dept., 8000 E. Jefferson Ave., Detroit 14, Mich. (1942)
WEINER, Louis, 4205 Kaywood Dr., Mt. Rainier, Md. (1944)
WEINER, Mervyn L., 7222 Flower Ave., Takoma Park, Md. (1948)
WEINER, William, 191 Lincoln Ave., Amherst, Mass. (1950)
WEINFELD, William, 505 Brook Dr., Falls Church, Va. (1946)
WEINGARTNER, Hans M., Hq. 9137, TSU QM Bd., Fort Lee, Va. (1950)
WEINLEIN, Anthony G., Bldg. Service Employees' Int. Union, Res. Dept., 749 N. Second St., Milwaukee 3, Wis. (1951)
WEINRYB, Bernard D., 606 W. 113th St., New York 25, N.Y. (1945)
WEINTRAUB, David, 34 W. 74th St., Apt. 5A, New York, N.Y. (1936)
WEINTRAUB, Sidney, Univ. of Pennsylvania, Dept. of Econ., Philadelphia 4, Pa. (1946)
WEINWURM, Ernest H., Stevens Inst. of Tech., Hoboken, N.J. (1941)
WEIR, Thomas O., Box 126, Hiram, Ohio. (1949)
WEISENFELD, Allan, 1060 Broad St., Newark, N.J. (1947)
§WEISS, Francis J., 2000 37th St., N.W., Washington 7, D.C. (1940)
WEISS, Franz X., 10 The Avenue, Orpington, Kent, England. (1928)
WEISS, George, Bache and Co., 36 Wall St., New York, N.Y. (1924)
WEISS, George A., 105 Cabrini Blvd., New York 33, N.Y. (1951)
**WEISS, Gertrude S. (Mrs. Harry), 5803 Warwick Pl., Chevy Chase 15, Md. (1947)
WEISS, Harry, 5803 Warwick Pl., Chevy Chase 15, Md. (1939)
WEISS, Hugo A., Adrian Col., Adrian, Mich. (1950)
WEISS, Leonard, 2231 California St., N.W., Washington 8, D.C. (1942)
WEISS, Leonard W., 2443 Pingree, Detroit 6, Mich. (1951)
*WEISS, Roger W., 5484 Everett Ave., Chicago 15, Ill. (1951)
WEISS, Samuel, 304 Martha's Rd., Hollin Hills, Alexandria, Va. (1945)
WEISS, Shirley F. (Mrs. Charles M.), 116 W. University Pkwy., Apt. 1317, Baltimore 10, Md. (1948)
WEISSKOPF, Walter A., 5555 S. Blackstone Ave., Chicago, Ill. (1939)
WEISSMAN, Jacob, Columbia Univ., Box 5, Hamilton Hall, New York 27, N.Y. (1948)
WEISSMAN, Rudolph L., Franklin Cole & Co., 1 Wall St., New York 5, N.Y. (1936)
WEISZ, Morris, Paris SRE/LA, c/o State Dept. Mail Room, Washington 25, D.C. (1948)
WEITZ, Leo, 1225 Ave. R, Brooklyn, N.Y. (1940)
WELCH, Emmett H., 3703 34th St., N.W., Washington, D.C. (1942)
WELCH, Ronald B., 3420 Potter Lane, Sacramento 15, Calif. (1931)
WELD, William E., "The Brunswick," Waterville, N.Y. (1921)
WELDEN, William C., H. P. Hood and Sons, 500 Rutherford Ave., Boston 29, Mass. (1939)
WELFLING, Weldon W., 61 Kingsbury St., Needham, Mass. (1936)
WELK, William G., 1734 P St., N.W., Washington 6, D.C. (1934)
WELLINGTON, C. Oliver, 111 Broadway, New York, N.Y. (1912)
WELLISZ, Leopold, 67-25 B 186th Lane, Fresh Meadows, Flushing, N.Y. (1943)
WELLMAN, Charles A., Jr., 1661 Santa Barbara, Glendale 8, Calif. (1944)
WELLMAN, Harry R., Univ. of California, 207 Giannini Hall, Berkeley, Calif. (1943)
WELLS, Charles C., Claremont Manor, 650 W. Harrison Ave., Claremont, Calif. (1937)
WELLS, Herman B., Indiana Univ., Bloomington, Ind. (1930)
WELLS, Paul J., Harvard Univ., 48 Little Hall, Cambridge 38, Mass. (1948)
WELSCH, E. Robert, 1012 S. Henderson St., Bloomington, Ind. (1949)
WELSH, Charles A., R.F.D., McLean, Va. (1944)
WELSH, Edward C., RFC, Washington 25, D.C. (1935)
WELSH, Lee M., Procter and Gamble Co., Gwynne Bldg., Cincinnati 1, Ohio. (1934)
WELSHANS, Merle, George Washington Univ., Sch. of Gov., Washington 6, D.C. (1948)
WEND, Jared S., 100 N. Racine Ave., Waukesha, Wis. (1948)
WENDT, Paul F., Univ. of California, Sch. of Bus. Admin., Berkeley 4, Calif. (1940)
WENDZEL, Julius T., 8364 Gull Rd., Richland, Mich. (1929)
WENNBERG, Samuel G., Univ. of Missouri, Sch. of Bus. and Pub. Admin., Columbia, Mo. (1946)
WENRICK, Ernest D., 813 E. Kingsley, Ann Arbor, Mich. (1950)
WENTWORTH, (Mrs.) Edna C., Soc. Sec. Bd., Equitable Bldg., Room 812, Baltimore, Md. (1934)
WENTWORTH, Edward N., Armour's Livestock Bur., Union Stock Yards, Chicago, Ill. (1924)
*WENZLAN, Thomas E., 106 S. Coler Ave., Urbana, Ill. (1950)
WENZLER, George H., 216 Chelsea Rd., West White Plains, N.Y. (1946)
WENZLICK, Roy, Roy Wenzlick and Co. Lib., 706 Chestnut St., St. Louis 1, Mo. (1938)
WERBOFF, Lawrence L., Northwestern Univ., Dept. of Econ., Evanston, Ill. (1948)
WERMEL, Michael T., 801 Van Buren St., N.W., Washington 12, D.C. (1936)
WERNER, Ray O., Colorado Col., Dept. of Econ., Colorado Springs, Colo. (1946)
*WERNER, Robert, 195 Monroe Pk., Madison 5, Wis. (1952)
WERNETTE, J. Philip, Univ. of Michigan, Sch. of Bus. Admin., Ann Arbor, Mich. (1927)
WERTHEIMER, Robert G., Babson Inst. of Bus. Admin., Boston 57, Mass. (1951)
WERTIMER, Sidney, Jr., 119 College Hill Rd., Clinton, N.Y. (1949)
WESSON, William H., Jr., Univ. of Chattanooga, Dept. of Econ. and Com., Chattanooga, Tenn. (1947)
WEST, C. H., Box 152, Sunol, Calif. (1926)
WEST, Miriam E., New Jersey Col. for Women, New Brunswick, N.J. (1927)
WEST, Robert J., 6829 Wellauer Dr., Milwaukee 13, Wis. (1936)
WEST, Sidney D., Jr., Lake Butler, Fla. (1947)
WESTCOTT, George W., Univ. of Massachusetts, Stockbridge Hall, Amherst, Mass. (1950)
WESTEBBE, Richard M., 3D Gibson Terrace Apt., Gibson St., Cambridge, Mass. (1949)
†WESTERFIELD, Ray B., Drawer 94A, Yale Sta., New Haven, Conn. (1912)
WESTERLUND, Barton A., 7240 S.W. 19th St., Miami 44, Fla. (1948)
WESTHAGEN, Milton H., Ripon Col., Dept. of Econ., Ripon, Wis. (1947)
WESTHOFF, William, 5117 Nottingham Rd., Detroit 24, Mich. (1951)
WESTING, J. Howard, Univ. of Wisconsin, Sch. of Com., Madison 16, Wis. (1949)
WESTMEYER, Russell E., Univ. of Arkansas, Col. of Bus. Admin., Fayetteville, Ark. (1952)
WESTON, Janet L., 508 W. Park Ave., Champaign, Ill. (1940)
WESTON, J. Frederick, Univ. of California, Col. of Bus. Admin., Los Angeles 24, Calif. (1941)
WEXLER, Harvey J., 355 E. Chester St., Long Beach, N.Y. (1950)
WEXLER, Hilda J., 118 Martha's Rd., Hollin Hills, Alexandria, Va. (1946)
WEXMAN, Joseph K., 841 Cleveland Rd., Hinsdale, Ill. (1944)
WEYFORTH, William O., Johns Hopkins Univ., Baltimore, Md. (1915)
WEYGINT, Nancy B. (Mrs. John R.), 7533 Norwood Dr., Kansas City 13, Mo. (1944)
WHALEN, Oren L., 208 W. Washington, Urbana, Ill. (1925)

WHALEY, Otis, Henderson State Teachers Col., Dept. of Econ. and Bus. Admin., Arkadelphia, Ark. (1938)
WHEELER, Bayard O., Univ. of Washington, Col. of Bus. Admin., Seattle 5, Wash. (1937)
WHEELER, John T., Univ. of Minnesota, Sch. of Bus. Admin., Minneapolis 14, Minn. (1951)
WHEELER, Oliver P., Fed. Res. Bank, Div. of Res., San Francisco, Calif. (1937)
WHELAN, Carl J., 3600 S St., N.W., Washington, D.C. (1929)
WHELPTON, Pascal K., P.O. Box 20 Grand Cent. Sta., New York 17, N.Y. (1920)
***WHIFFEN, Frank T.,** 2036 Orizaba Ave., San Diego 3, Calif. (1952)
WHIPPLE, Clayton E., Littleworth, Clinton, Md. (1944)
WHITAKER, Benjamin P., Union Col., Schenectady, N.Y. (1925)
WHITBECK Volkert S., Bank of New York, New York 15, N.Y. (1952)
WHITE, Alfred D., 831 Fairview Ave., Apt. 4, Takoma Park, Md. (1949)
WHITE, Alvin C., 1078 N. Broad St., Galesburg, Ill. (1947)
WHITE, C. Michael, Huntingdon Col., Dept. of Bus. Admin., Montgomery 6, Ala. (1949)
WHITE, Charles P., Univ. of Tennessee, Sch. of Com., Knoxville, Tenn. (1924)
WHITE, Donald J., 25 Pilgrim Rd., Milton, Mass. (1947)
WHITE, Henry F., Bradley Univ., Dept. of Econ., Peoria, Ill. (1945)
WHITE, J. Austin, Union Central Bldg., Cincinnati, Ohio. (1945)
WHITE, Joseph H., 400 N. Michigan Ave., Room 1100, Chicago 11, Ill. (1949)
WHITE, Melvin I., 758 E. 17th St., Brooklyn 30, N.Y. (1943)
WHITE, Wilford L., 3131 Nebraska Ave., N.W., Washington, D.C. (1922)
WHITE, William H., Int. Monetary Fund, 1818 H St., N.W., Washington 25, D.C. (1949)
WHITEHOUSE, Frank H., R.R. 2, Box 219-B, Vienna, Va. (1952)
WHITESEL, Theodore L., Montana State Univ., Sch. of Bus. Admin., Missoula, Mont. (1949)
***WHITESIDE, Maree L.,** 96 E. Manning St., Providence 6, R.I. (1951)
WHITLO Charles M., Univ. of Southern California, Col. of Com., University Park, Los Angeles, Calif. (1952)
WHITLOW, Claude J., 435 Canby St., P.O. Box 396, Vermillion, S.D. (1946)
WHITMAN, Marcus, Box 1985, University, Ala. (1929)
WHITMAN, Roswell H., c/o American Embassy, Oslo, Norway. (1934)
WHITMAN, William T., Sch. of Bus. Admin., Emory University, Ga. (1940)
WHITNEY, Ramey C., 2736 Royal Ct., Lincoln, Neb. (1946)
WHITNEY, Simon N., 17 Dunham Rd., Scarsdale, N.Y. (1927)
WHITTLESEY, Charles R., Wallingford, Pa. (1925)
WICHMANN, Arthur A., 1602 N. Glendale, Wichita, Kans. (1941)
WICK, James L., 901 8th Ave., New York 19, N.Y. (1944)
WICKER, Elmus R., 233 Harrison St., Lake Charles, La. (1946)
WICKERSHAM, Edward D., 2633 Salem Ave., Apt. 2, Dayton 6, Ohio. (1950)
WICKIZER, Vernon D., Stanford Univ., Food Res. Inst. Stanford, Calif. (1943)
WIDENMANN, Hans A., Carl M. Loeb, Rhoades and Co., 51 Broadway, New York 6, N.Y. (1947)
WIECKING, Charles W., 320 E. Maple Rd., No. 106, Indianapolis 5, Ind. (1948)
WIEGAND, G. Carl, Univ. of Mississippi, University, Miss. (1949)
WIENER, Edward, 1025 E. 14th St., Brooklyn 30, N.Y. (1949)
WIENER, Howard, 338 E. 15th St., New York 3, N.Y. (1950)
WIENER, Robert J., 3325 N.E. Couch, Portland 15, Ore. (1944)
WIERS, Paul, Shadyside, Md. (1939)
WIESEN, Thomas F., 2216 Broadway, Lubbock, Tex. (1939)
WIESENFELD, Henry M., 3023 St. Paul St., Baltimore, Md. (1928)
WIEST, Edward, 1230 Summit Dr., Lexington, Ky. (1916)
***WIGGINS, (Mrs.) Suzanne,** 726 Atwater Ave., Bloomington, Ind. (1952)
WIGHTMAN, Guy J., Dairymen's League Co-op. Asso., 100 Park Ave., New York 17, N.Y. (1941)
WILCOX, Charles A., 320 Ahwahnee Lane, Lake Forest, Ill. (1942)
WILCOX, Clair, 510 Ogden Ave., Swarthmore, Pa. (1923)
WILCOX, Jack H., Univ. of Tennessee, Knoxville, Tenn. (1947)
WILCOX, Walter W., Lib. of Congress, Washington 25, D.C. (1941)
WILEY, Jay W., Purdue Univ., 106 Recitation Bldg., Lafayette, Ind. (1937)
WILKEY, Harry L., Iowa Wesleyan Col., Mt. Pleasant Iowa. (1946)
WILKIE, John A., 126 Forest St., Madison, Wis (1948)
***WILL, Robert E.,** Yale Univ., Dept. of Econ., New Haven, Conn. (1951)
WILLARD, Joseph W., Dept. of Nat. Health and Welfare, Res. Div., 615 Jackson Bldg., Ottawa, Ont. Canada. (1949)
†**WILLCOX, Walter F.,** 3 South Ave., Ithaca, N.Y (1892)
WILLER, Henry R., c/o Young, R. 1, Knoll Rd., Boonton Manor, N.J. (1947)
WILLETT, Edward F., 235 Crescent St., Northampton Mass. (1938)
WILLETT, Edward R., 43 Chapman Rd., Wakefield Mass. (1947)
WILLIAMS, Charles R., 124 N. 18th St., Philadelphia 3, Pa. (1946)
WILLIAMS, Charles W., Fed. Res. Bank, Richmond Va. (1945)
WILLIAMS, Constance, 12 Jordan Ave., Concord N.H. (1943)
WILLIAMS, Conway S., 52 W. Confederate Ave. Gettysburg, Pa. (1940)
WILLIAMS, Ellis T., 3821 S. Agric. Bldg., Washington 25, D.C. (1951)
WILLIAMS, Ernest W., Jr., 214 Glenwood Ave., Stratford, Conn. (1943)
WILLIAMS, Faith M., U. S. Dept. of Labor, Bur. of Labor Statis., Washington, D.C. (1925)
WILLIAMS, Harold S., Central Washington Col. Ellensburg, Wash. (1948)
WILLIAMS, Harry, Jr., Univ. of Houston, Box 514 Houston, Tex. (1949)
WILLIAMS, Henry F., Box 213 Beachway, Fox River Grove, Ill. (1947)
WILLIAMS, John B., 30 Lowell Rd., Wellesley Hills Mass. (1939)
†**WILLIAMS, John H.,** Harvard Univ., Littauer Center, Cambridge, Mass. (1919)
WILLIAMS, Kenneth B., 4816 Cumberland Ave. Chevy Chase 15, Md. (1937)
WILLIAMS, (Mrs.) Lucile B., 95 N. Broadway, White Plains, N.Y. (1940)
WILLIAMS, Maurice J., 13202 Aleutian Ave., Rockville, Md. (1953)
WILLIAMS, Randall S., Cairo, First Secy., Dept. of State, Washington 25, D.C. (1944)
***WILLIAMS, Richard V.,** 2444 15th St., Cuyahoga Falls, Ohio. (1952)
WILLIAMS, Robert M., Univ. of California, Col. of Bus. Admin., Los Angeles 24, Calif. (1947)
WILLIAMS, Roger J., Jr., 10 E. 603rd St., Shank Village, Orangeburg, N.Y. (1947)
WILLIAMS, Whiting, 3030 Euclid Ave., Cleveland Ohio. (1942)
WILLIAMS, Wilson E., Virginia State Col., Box 516 Petersburg, Va. (1949)
WILLIAMSON, Harold F., Northwestern Univ., Dept of Econ., Evanston, Ill. (1935)
WILLIAMSON, Kossuth M., Wesleyan Sta. Middletown, Conn. (1920)
WILLIAMSON, W. Rulon, 3400 Fairhill Dr., Washington 23, D.C. (1942)
WILLING, (Mrs.) Pearl R., 4704 Delafield Ave., New York 71, N.Y. (1947)
WILLIS, Elisabeth C. (Mrs. Ben S.), 2320 Knapp St Ames, Iowa. (1940)

WILLIS, J. Brooke, Chase Nat. Bank, 18 Pine St., New York, N.Y. (1933)
WILLIS, Parker B., 60 Brattle St., Apt. 401, Cambridge 38, Mass. (1947)
WILLITS, Joseph H., Rockefeller Found., 49 W. 49th St., New York 20, N.Y. (1919)
WILLS, Donald, 1512 S. Arlington Ridge Rd., Arlington, Va. (1949)
WILLS, John H., Northern Trust Co., 50 S. La Salle St., Chicago, Ill. (1940)
WILLS, Walter J., Univ. of Illinois, Col. of Agric., Urbana, Ill. (1951)
WILMETH, Jo B., 219 Eighth St., S.W., Washington 4, D.C. (1947)
WILMINGTON, Martin W., 306 Third Ave., New York 10, N.Y. (1946)
WILMOT, William V., Jr., Univ. of Wisconsin, Sterling Hall, Madison 6, Wis. (1942)
WILSEY, H. Lawrence, MSA-STEM, APO 928, c/o Postmaster, San Francisco, Calif. (1947)
WILSON, Andrew W., Univ. of Arizona, Sch. of Bus. and Pub. Admin., Tucson, Ariz. (1949)
WILSON, Bert, Jr., Firestone Tire & Rubber Co., Prod. Plann. Dept., Akron 17, Ohio. (1950)
WILSON, Edwin B., 55 Shattuck St., Boston, Mass. (1912)
WILSON, Elizabeth W., 1 Waterhouse St., Cambridge, Mass. (1929)
WILSON, G. Lloyd, Univ. of Pennsylvania, W283 Dietrich Hall, Philadelphia, Pa. (1946)
WILSON, Howard, 2711 Giddings St., Chicago 25, Ill. (1944)
WILSON, Jack A., 2101 Fifth Ave., S., Irondale, Ala. (1952)
WILSON, James F., 1195 Dorsh Rd., South Euclid 21, Ohio. (1952)
WILSON, John D., 10 Alden Pl., Bronxville, N.Y. (1946)
WILSON, John S. G., London Sch. of Econ. and Polit. Sci., Houghton St., Aldwych, London, W.C. 2, England. (1953)
WILSON, Joseph T., Jr., Sun Oil Co., 1608 Walnut St., Philadelphia 3, Pa. (1953)
WILSON, Leonard M., Jr., 1 Broad Pkwy., White Plains, N.Y. (1951)
WILSON, T., Univ. Col., Oxford, England. (1951)
WILSON, Theodore F., 24 W. Lawnwood, Shanks Village, Orangeburg, N.Y. (1948)
WIMSATT, Genevieve B., 3721 Alton Pl., N.W., Washington 16, D.C. (1941)
*WIN, Pe Tin, Indiana Univ., Box 201, Rogers Center, Bloomington, Ind. (1953)
WINDHORST, Richard B., 120 S. La Salle St., Room 1714, Chicago 3, Ill. (1945)
WINDMULLER, John P., New York State Sch. of Ind. and Labor Rela., Cornell Univ., Ithaca, N.Y. (1950)
WINESTONE, Robert L., 102 Langley Park Apts., 1428 Kanawha St., Hyattsville, Md. (1948)
WING, Mary C., 85 Charles St., New York 14, N.Y. (1951)
WINGATE, John W., City Col., 17 Lexington Ave., New York 10, N.Y. (1929)
WINKLER, Augustine L., Col. of St. Charles Borromed, 2010 E. Broad St., Columbus 9, Ohio. (1951)
WINN, Willis J., Univ. of Pennsylvania, Wharton Sch., Fin. Dept., Philadelphia 4, Pa. (1941)
WINNICK, Louis, Columbia Univ., 401 Bus., New York 27, N.Y. (1947)
WINSLOW, Earle M., 2333 N. Vernon St., Arlington, Va. (1923)
WINSLOW, Rex S., 118 University Dr., Chapel Hill, N.C. (1942)
WINSTON, Charles M., 8548 White Ave., Brentwood, Mo. (1950)
WINSTON, Clement, 1420 Tuckerman St., N.W., Washington 11, D.C. (1946)
WINTER, Egon P., Milton Col., Milton, Wis. (1950)
WINTERGALEN, Edward, Regis Col., Econ. Div., Denver 11, Colo. (1946)
WINTERS, Robert A., 318 Grant Ave., Highland Park, N.J. (1937)
WIRICK, Grover C., Jr., 807 N. Washington St., Lansing 6, Mich. (1946)
**WIRPEL, Estelle M. (Mrs. Sander W.), 9529 S. Euclid Ave., Chicago, Ill. (1948)
WIRPEL, Sander W., 9529 S. Euclid Ave., Chicago, Ill. (1948)
WISE, Harold F., 1077 El Camino Real, Menlo Park, Calif. (1950)
WISSEL, Peter E., 1823 Hannington Ave., Wantagh, L.I., N.Y. (1947)
WITHERS, William H., 399 E. 52nd St., New York 22, N.Y. (1928)
WITNEY, Fred, Indiana Univ., Dept. of Econ., Bloomington, Ind. (1947)
WITT, Lawrence W., Michigan State Col., Dept. of Agric. Econ., East Lansing, Mich. (1950)
WITTE, Edwin E., Univ. of Wisconsin, Sterling Hall, Madison 6, Wis. (1920)
WITTGENSTEIN, Herbert C., Stanford Univ., Dept. of Econ., Stanford, Calif. (1952)
WITTRICH, Karl F. J., 560 W. 180th St., New York 33, N.Y. (1947)
WIXON, Rufus, Univ. of Pennsylvania, Wharton Sch., Philadelphia 4, Pa. (1946)
WOERNER, Kurt, Redroof, Wynnewood, Pa. (1937)
WOFFORD, Ben M., Box 948, State College, Miss. (1949)
*WOJTYLA, Henry L., 1616 N. Wood, Chicago 22, Ill. (1952)
WOLF, Alfred C., R.F.D. 1, McLean, Va. (1947)
WOLF, Alois F., Hills Bros. Co., 110 Washington St., New York, N.Y. (1942)
WOLF, Charles, Jr., 4417 First Rd., S., Arlington, Va. (1948)
WOLF, Emanuel, 31 E. 54th St., Brooklyn 3, N.Y. (1950)
WOLF, Franz B., 318 Livingston Ter., S.E., Washington 20, D.C. (1947)
WOLF, Harry D., 1 Davie Wood, Chapel Hill, N.C. (1926)
WOLF, William B., Univ. of Chicago, Sch. of Bus., Chicago 37, Ill. (1949)
†WOLFE, Albert B., Ohio State Univ., Columbus 10, Ohio. (1905)
WOLFE, Cedric, 649 E 14th St., New York, N.Y. (1948)
WOLFE, French E., 3419 Manor Hill Dr., Cincinnati 20, Ohio. (1912)
§WOLFF, Reinhold P., P.O. Box 277, Univ. Br., Miami, Fla. (1938)
WOLFSON, Robert J., Univ. of Michigan, Survey Res. Center, Room 211, Ann Arbor, Mich. (1948)
WOLFSON, Theresa, 810 E. 19th St., Brooklyn, N.Y. (1930)
WOLK, Samuel J. B., 242 E. 14th St., New York 3 N.Y. (1948)
WOLKISER, Arthur M., 15 William St., New York, N.Y. (1935)
WOLLMAN, Nathaniel, Univ. of New Mexico, Dept. of Econ., Albuquerque, N.M. (1938)
WOLLOCH, Zygfryd B., 161 Victory Blvd., New Rochelle, N.Y. (1951)
WOLMAN, Abel, Johns Hopkins Univ., Homewood, Baltimore 18, Md. (1924)
WOLMAN, Leo, 1819 Broadway, New York, N.Y. (1915)
WOLOTKIN, Paul, 299 E. Mt. Eden Ave., New York 57, N.Y. (1952)
WOLPERT, Samuel A., 3919 Fordleigh Rd., Apt. B, Baltimore 16, Md. (1952)
WONG G. HONG, Henry, 731–741 Misericordia St., Manila, Philippines. (1949)
WOOD, Donald T., 46 Rockwell Ave., Long Branch, N.J. (1947)
WOOD, Douglas M., 2708 Buena Vista St., Burbank, Calif. (1950)
WOOD, Elmer, Univ. of Missouri, Columbia, Mo. (1931)
WOOD, Helen, 1306 34th St., N.W., Washington 7, D.C. (1945)
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Leavitt, C. T.
Lebeda, A.
Strain, R. E.
Thompson, M. R.

Cedar Rapids
Coe Col. Lib.
Henry, J. M.
Waples, E. O.
Watson, D. A.

Davenport
Bowie, L. W.
Collins, W. J.
Danner, P. L.
Davenport Pub. Lib.

Decorah
Luther Col. Lib.

Des Moines
Alley, W. E.
Bohlman, H. W.
Cosson, C.
Des Moines Pub. Lib., 100 Locust St.
Drake Univ. Lib.
Eaton, R. C.
Loewy, H.
Myhr, A. F.
State Traveling Lib., Historical Bldg.
Wagner, W. C.
Warters, D. N.

Dubuque
Carnegie Pub. Lib.
Clarke Col. Lib.
Kurth, E. A.
Loras Col. Lib., 14th and Alta Vista Sts.
St. Maureen, Sister M.
Univ. of Dubuque Col. Lib.

Eldora
Bramwell, W. K., Hardin County Savings Bank

Fairfield
Parsons Col. Lib.

Fayette
Upper Iowa Univ. Lib.

Grinnell
Charlton, J. W.
Grinnell Col. Lib.
Knopf, K. A.
Stauss, J. H.
Strong, E. D.

Indianola
Simpson Col. Lib.

Iowa City
Bloom, C. C.
Davies, G. R.
Harris, G. T.
Johnson, R. H.
Leib, K. E.
Martin, W. H.

McConnell, C. R.
Morgan, C. A.
Olson, P. R.
Phillips, C. A.
Smith, W. R.
State Univ. of Iowa Lib., Serials Acquisition
Sweeney, D. L.
Wagner, L. E.

Keokuk

Breheny, J. R.

Lamoni

Graceland Col. Lib.
Higdon, E. T.
Runkle, J. C.

Le Mars

Fireoved, E. L.

Mason City

Mason City Pub. Lib.

Mt. Pleasant

Ellis, R. K.
Shaw, M. E.
Willkey, H. L.

Mount Vernon

Cornell Col. Lib.
Ennis, J. H.
Rich, C. L.

Orange City

Northwestern Col. Lib.

Oskaloosa

William Penn Col. Lib.

Pella

Central Col. Lib.
Van Dahm, T. E.

Waverly

Muench, C.
Wartburg Col. Lib.

KANSAS

Atchison

Baska, L.
Schroll, Sister M. A.

Baldwin

Guest, H. W.

Bethel

Matzer, Donald R., 2945 N. 76th St.

Carbondale

Mosso, L. D.

Delphos

Billings, A. G.

Emporia

Col. of Emporia, Anderson Mem. Lib.
Kansas State Teachers' Col. White Lib.

Fort Leavenworth

C and SC Lib.

Hays

Fort Hays Kansas State Col. Lib.

Kansas City

James, K. V.
Pub. Lib., Huron Sq.
Sullivan, Sister M.

Lawrence

Begando, J. S.
Cabe, J. C.
Dade, E. B.
Gagliardo, D.
Howey, R. S.
Ise, J.
Nelson, E. G.
Pritchard, L. J.
Stockton, F. T.
Univ. of Kansas, Ext. Lib. Service
Univ. of Kansas Lib., Period. Dept.
Warne, C.

Lindsborg

Bethany Col. Lib.

Manhattan

Bagley, E. S.
Bray, J. O.
De Cou, D. F.
Eriksen, C.
Fisher, W. D.
Hodges, J. A.
Kansas State Col. Lib.
Montgomery, G.
Riggs, F. E.
Schruben, L. W.

McPherson

McPherson Col. Lib.
Olson, O. A.

North Newton

Bethel Col. Lib.

Ottawa

Berndt, R.
Lee, J. F.
Ottawa Univ. Lib.

Pittsburg

Kansas State Teachers Col., Porter Lib.

Prairie Village

Davis, G. C., Jr.

Salina

Finn, Sister I. M.
Kansas Wesleyan Univ. Li
Steele, E. J.
Viau, Sister J. M.

Sterling

Sterling Col. Lib.

Topeka

Free Pub. Lib.
Kansas State Lib., St House
Marcoux, D. C.
Monroe, D.
Washburn Municipal Un Lib.

Whitewater

Umbach, J. C.

Wichita

Friends Univ. Lib.
Neff, F. A.
Ricketts, F. M.
Spaulding, J. L.
Univ. of Wichita, Morris Lib.
Wichita City Lib.
Wichmann, A. A.

Winfield

Southwestern Col. Lib.

KENTUCKY

Ashland

Ashland Junior Col. Li 16th and Central

Berea

Berea Col. Lib.
Chin, R.
Menefee, R. G.

Bowling Green

Western Kentucky State C Lib.

Covington

Northern Kentucky Ext. C ter

Danville

Centre Col. Lib.

Fort Thomas

Sheehan, J. G.

Frankfort

Dawson, C. C.
Herzel, W. G.
Morrow, G. D.

Georgetown

'eorgetown Col. Lib.

Lexington

;owman, M. J.
:arpenter, C. C.
:arter, L. H.
:oolsen, F. G.
:rwin, C. C.
Iall, W. S.
Iargreaves, H. W.
Iaynes, W. W.
Ieizer, R. T., Jr.
ennings, W. W.
ohnson, J. L.
.ockyer, C. R.
Iartin, J. W.
Iasten, J. T.
IcVey, F. L.
Iinton, C. R.
Iyers, W. S., Jr.
Iicholls, W. D.
ickett, R. R.
rice, H. B.
.edman, J. C.
.uschell, G. J.
chafer, R.
ullivan, R.
'ransylvania Univ. Lib.
Iniv. of Kentucky Lib.
/iest, E.

London

ue Bennett Col. Lib.

Louisville

.bner, C. E.
'ellarmine Col. Lib., 2000 Norris Pl.
'raf, J. R.
:odges, J. B.
udd, F.
.ouisville Free Pub. Lib., 301–333 Library Pl.
Iartin, B. F.
.obertson, H. M.
tone, E. A.
Iniv. of Louisville Lib., Belknap Campus
/agner, M.

Morehead

Iorehead State Teachers Col., Johnson Camden Lib.

Murray

Iurray State Col. Lib.

Owensboro

:illim, M. H.
:entucky Wesleyan Col. Lib.

Paducah

'arnegie Public Lib.

Richmond

:astern Kentucky State Teachers Col. Lib., Lancaster Ave.
Moore, W. J.

LOUISIANA

Baton Rouge

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Borth, D., Jr.
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Edwards, A. L.
Louisiana State Lib., State Capitol Grounds
Louisiana State Univ., Gen. Lib., Serials Div., Acquisitions Dept., Univ. Sta.
McCracken, H. L.
Melton, L. J., Jr.
Overmiller, C. S.
Payne, J. P., Jr.
Preston, S. W.
Ross, W. D.
Scroggs, W. O.
Sharp, A. M.
Southern Univ. Lib., Southern Br. P.O.
Thompson, K. M.
Totty, S. V.
Townsend, D.

Grambling

Grambling Col. Lib.

Hammond

Southeastern Louisiana Col. Lib.

Lafayette

Southwestern Louisiana Inst. Lib.

Lake Charles

McNeese State Col. Lib.
Wicker, E. R.

Monroe

Northeast Louisiana State Col. Lib.

Natchitoches

Northwestern State Col., Russel Lib.

New Orleans

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Carnes, H. B.
Chances, R. J.
Connor, J.
Coper, R.
Courtney, K. H.
Dinwiddie, G. S.
Elsasser, R. W.
Engler, H.
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French, R. W.
Grambsch, P. V.
Gutierrez, L. E.
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Loyola Univ. Lib., 6363 St. Charles Ave.
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Mitchell, H. A.
New Orleans Pub. Lib., 1031 St. Charles Ave.
Oakes, R. H.
Rice, J. P.
Ritland, R. W.
Robinson, M. A.
Tulane Univ., Howard-Tilton Mem. Lib., Audubon Pl. and Freret
Tulane Univ. of Louisiana, Norman Mayer Lib., Norman Mayer Mem. Bldg.
Warren, G. E.
Xavier Univ. Lib., New Unit, Washington and Pine Sts.
Yenni, J. E.

Ruston

Grubbs, K. R.
Louisiana Poly. Inst. Lib.
Tracey, M. B.

Shreveport

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Caine, W. E.
Centenary Col. Lib.
Smeltzer, R. C.

University

Trant, J. B.

MAINE

Bangor

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Brunswick

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Benson, C. S.
Bowdoin Col. Lib.
Brown, P. M.
Catlin, W. B.
Cushing, M. B.
Robinson, N. Y.
Storer, J. A.

Fryeburg

Long, J. J.

Houlton

Ricker Col., Hayes Lib.

Lewiston

Bates Col. Lib.
Carroll, T. M.

Freedman, A. M.
Giguere, M. D.
Holdren, B. R.

Orono

Kirshen, H. B.
Peck, H. A.
Shay, R. P.
Univ. of Maine Lib.

Portland

Goodbar, J. E.
Jordan and Jordan, Fidelity Bldg.

Waterville

Barlow, R.
Breckenridge, W. N.
Colby Col. Lib.
Morrow, C. H.
Pullen, R. W.

MARYLAND

Aberdeen Proving Grounds

Abady, C. R.

Accokeek

North, M. H.

Annapolis

Fredland, J. R.
Matthews, C. A.
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Reynolds, R. A.

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Goldstein, H.
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Jackson, F. A.
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Kretzschmar, C. P.
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St. Mary's Seminary Lib., Philosophy Dept., N. Paca St.
Schulz, J. H. I.
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Terrell, J. M.
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Wolpert, S. A.

Bethesda

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Atterberry, P. R.
Bangs, R. B.
Blackman, H. H.
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Heany, D. F.
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Slitor, R. E.
Small, A. H.
Small, S. S.
Smith, P. F.
Snyder, E. M.
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Stimson, R. H.
Trezise, P. H.
Youngdahl, C. R.

Bladensburg

Cumberland, J. H.

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State Teachers Col. Lib.

Cambridge

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Washington Col., George Ave Bunting Lib.

Cheverly

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Woodworth, L. N.

Chevy Chase

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Adler, J. H.
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Coppock, J. D.
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Garfield, F. R.
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Young, J. P.

Chillum

Goldfinger, N.

Clinton

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College Park

Calhoun, C. E.
Clemens, E. W.
Cover, J. H.
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Dillard, L. G.
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Peterson, J. M.

Emmitsburg

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St. Joseph's Col. Lib.

Frederick

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Glen Burnie

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Tolton, J. H.

Landover

Feirson, A. M.
Thunberg, P. H.

Landover Hills

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McHugh, T. F.
Spencer, D. L.

Laurel

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Schiferl, M.

Mayo

McMurray, J. P.

Mount Rainier

Alpert, M.
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Gekker, P.
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Liebling, H. I.
Weiner, L.

Newburg

McGregor, H. E.

North Chevy Chase

Fishburn, J. T.

Pikesville

Cahn, F. B.

Princess Anne

Maryland State Col. Lib.

Riverdale

Shor, M.

Rockville

Bortz, N. M.
Goldstein, S.
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Sherman, R. U., Jr.
Smigel, S. E.
Williams, M. J.

Salisbury

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Shadyside

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Bahn, R.
Baum, W. C.
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Brill, D. H.
Cohen, W. J.
Coyne, W. J.
Curtis, D. W.
Cushman, B.
Davis, D. D.
Davis, J. C.
Doan, M. C.
Dozier, H. D.
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Ferguson, A. R.
Ficker, H.
Fisher, P.
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Fried, E. R.
Goldberg, J. P.
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Kassalow, S. D.
Limmer, E.
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March, M. S.
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Schurr, S. H.
Scoville, J. A.
Shavell, H.
Shiskin, J.
Sloan, V. B.
Stein, H.
Treanor, G. R.
Tsiang, S. C.
Unstad, L. L.

Takoma Park
Alexander, T. R.
Anderson, L. M.
Anderson, P. H.
Beno, J.
Gorham, J. E.
Grose, L.
Jones, W. K.
Margolin, R.
Otis, D. S.
Pilvin, H.
Rubenstein, I.
Saunders, L. G.
Saunders, R. D.
Weiner, M. L.
White, A. D.
Yager, J. A.

Towson
Cook, R. G.

University Park
Larimore, T. R.

West Hyattsville
Vogely, W. A.

Westminster
Western Maryland Col. Lib.

Wheaton
Barnett, H. J.
Marimont, M. L.
Newman, M. A.
Rosenthal, J.

Wheaton Park
Pierce, E. A., Jr.

Woodstock
Flanagan, W. W.
Haller, J. A.

MASSACHUSETTS

Amherst
Amherst Col. Lib.
Cole, C. W.
Gamble, P. L.
Hardy, H. E.
Haller, W., Jr.
Howard, M. C.
Keir, P. M.
Kimball, M.
Ludtke, J. B.
Morris, B. R.
Nelson, J. R.
Rothenberg, J.
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Thorp, W. L.
Univ. of Massachusetts, Goo ell Lib.
Warne, C. E.
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Andover
Burns, E. J.

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Grosse, A. P.
Peret, J. C. G.
Robinson, R.

Ashland
Rallis, J. J.

Auburndale
Packard, R. M.

Babson Park
Alexander, J.
Babson Inst. Lib.
Ford, C. W.
Payne, W. F.

Bedford
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Belmont
Redlich, F. L.
Huse, C. P.
Lintner, J.

Boston
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Boston Pub. Lib., Kirst Bus. Lib., 20 City H Ave., 1st Floor
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Boston Univ., Col. of G Educa Lib., 785 Comm wealth Ave.
Boston Univ. Lib., Col. Lib. Arts, 725 Comm wealth Ave.
Boston Univ. Lib., Sch. Pub. Rela. and Com., Exeter St.
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Brown, T. H.
Butters, J. K.

Cherry, R. W.
Copeland, M. T.
Corey, E. R.
Cushman, F. M.
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De Fabinyi, T. I.
Delano, M. S.
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Welden, W. C.
Wertheimer, R. G.
Wilson, E. B.
Wyche, C., Jr.

Bradford

Bradford Junior Col. Lib.

Braintree

Dymsza, W. A.

Bridgewater

State Teachers Col. Lib.

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Myers, H. S.
O'Connor M. C.

Brockton

Brockton Pub. Lib., Main St.

Brookline

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Boyden, T. C.
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Harvard Univ., Littauer Lib.
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Chestnut Hill

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Bradford Durfee Tech. Inst.
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Fitchburg

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Jamaica Plain

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Fulton
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Hannibal
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Ellsworth, J. O.

Jefferson City
Lincoln Univ. Lib.
Missouri State Lib., State Office Bldg.

Joplin
Joplin Junior Col., 4th and Byers
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Kansas City
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Bryant, W. D., Community Studies, Inc., 928 Main St.
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Cawthorne, D. R.
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Eckley, R. S.
Edmiston, H. H.
Faust, L. M.
Fed. Res. Bank Lib.
Fisher, G. C.
Hodges, J. R.
Kansas City Pub. Lib., 9th and Locust Sts.
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Ramsey, F.
Robb, T. B.
Rockhurst Col. Lib., 5225 Troost Ave.
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Tow, C. W.
Univ. of Kansas City Lib., 5100 Rockhill Rd.
Weygint, N. B.

Kennett
Kennett High Sch.

Kirksville
Aukerman, R. C.
Northeast Missouri State Teachers Col.

Kirkwood
Abbott, W. J., Jr.
Dauten, C. A.

Lexington
Wentworth Mil. Acad. Lib.

Liberty
William Jewell Col. Lib.

Marshall
Missouri Valley Col. Lib

Memphis
Bedford, J. B.

Nevada
Cottey Col. Lib.

Parkville
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Sun, N. M.

Rolla
Missouri Sch. of Mines Lib.

St. Charles
Lindenwood Col. Lib.
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St. Louis
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St. Louis Pub. Lib., Olive, 13th and 14th Sts.
St. Louis Univ., Sch. of Com. and Fin. Lib., 3674 Lindell Blvd.
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Renne, R. R.

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Montana Sch. of Mines Lib.

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Carroll Col. Lib.

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Univ. of Nebraska Lib.
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Fair Lawn

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Fanwood

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Fort Lee

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Morris, V. F.
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Post Lib., Special Services

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West, M. E.

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Orange

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De La Sierra, Fermin, Goya 44
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Nakayama, I.
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Nippon Yusen Kaisha, Hd. Office, Gen. Affairs Div., 12 Kayabacho 1-chome, Nihonbashi Chuo-ku
Nomura Shoken Chosabu, No. 1 1-chome Kabuto-cho, Nihonbashi Chuo-Ku
Norinsho-Nogyo-Sogo-kenkyusho, Nat. Res. Inst. of Agric., No. 8 Azabu-Shin-Ryudo-cho, Minato-ku
Sapir, H. M.
Seiji-Keizai-Kenkyujo, c/o Meiji Univ., Kanda-Surugadai, Chiyoda-ku
Seiko, Teruo, 1625 Nogata-machi 2-chome, Nakano-ku
Sekai Keizai Chosakai, 8 2-chome Ote-machi, Chiyoda-ku
Sekai-Roodoo-Mondai-Chosajo, c/o Ryuh-Roh-Renkaikan, No. 20 Honshiba-3-chome, Minato-ku
Soorifu Tookei Iinkai, Soomaka Shiryo-Shitsu, 5 Sannen-cho Chiyoda-ku
Sori-Fu Tokei-Kyoku, Prime Minister's Office, Toyamocho Shinjuku-ku
Toki, Kazuo, 1032 Yoyogioyamacho, Shibuya-ku
Tokyo Bank Chosa-bu, No. 6 Nihonbashi-Hongoku-cho, 1 chome Chuo-ku
Tokyo Kogyo Daigaku, Toshokan Ookayama Meguro-ku
Tokyo Toritsu Univ. Lib., Fusuma-machi Meguro-ku
Tokyo Univ. Lib., Kyooyoo-Gaku-bu, Komaba Meguro-ku
Tokyo Woman's Christian Col., Dept. of Soc. Sci., Iogi-2-chome, Suginami-ku
Toyo-Daigaku-Toshokan, Toyo Univ. Lib., No. 17 Hara-machi, Bunkyo-ku
Toyo Univ. Lib., No. 17 Hara-machi, Bunkyo-ku
Tsuru, S.
Tsu-San-Sho Kogyo Gijutsu-In Chosie-Bu, Chosa-ka 5 Higashi-Ginza-7-chome, Chuo-ku
U. S. Info. Center, American Embassy
U. S. Info. Centers, c/o Uspolad
Waseda Univ. Lib., c/o Kokusai Shobo, Ltd., 5 Ogawamachi 3-chome, Kanda Chiyoda-ku
Waseda Univ., Grad. Sch. Div. of Econ., Totsukamachi Shinjuku-ku
Yamashita, M.
Yoshimura, K.

Toyohashi

Aichi Univ. Lib., Machibatacho

Urawa

Saitama-Daigaku-Tosho-kan, Saitama Univ. Lib.

Utsonomiya

Utsonomiya Daigaku Toshokan, Utsonomiya Univ. Lib., Wakagusa-Machi

Yamagata

Yamagata Univ. Lib., Koshirakawacho

Yamaguchi

Yamaguchi Univ. Lib., Keizaigakubu-Bunkan, Kameyama

Yokohama

Keio Gijuku Univ., Hiyoshi-Kenkyu-sho, Hiyoshi-machi Koohoku-ku
Yokohama-Shiritsu-Daigaku-Toshokan, Yokohama Municipal Univ. Lib., Kanazawa-ku

LEBANON

Beirut

Badre, Albert, American Univ.
Chamieh, S. M.
Fei, E.
Gannage, Elie, B. B. 295
Harbell, J. B.
Himadeh, S. B.
Mahhouk, A.
Peter, H. W.
Tabourian, A. K.
Thweatt, W. O., II
U. S. Info. Center, American Embassy

MALAYA

Kuala Lumpur

Fed. Secretarial Lib.

Penang

U. S. Info. Center, America Consulate

Singapore

Univ. of Malaya, Lib., Clun Rd.

PAKISTAN

Dacca

Husain, A. F. A.
Sharif, M. R.
U. S. Info. Center, America Consulate
Univ. of Dacca, Ramna P.O.

Karachi

Alavi, H. A.
Gov. of Pakistan, Com. Intelligence and Statis., Dir Com. Lib.
Gov. of Pakistan, Ministry Fin. Lib.
Hassan, M. I.
State Bank of Pakistan Lib Central Directorate
U. S. Info. Center, America Embassy
Univ. of Karachi Lib.

Lahore

Ideal Book House, 194 Anakali

Tangail

Saha, J.

PHILIPPINES

Davao City

Lucas, P. G.

Dulawan

Vijandre, M.

Iloilo

Iloilo Col. Lib., Univ. of t Philippines

Manila

Central Bank Council, Chaiman, Dept. of Fin.
Cunanan, J.
Dalisay, A. M.
de los Reyes, J. P.
Foster, M. A.
House of Representatives
Inst. of Sci., Sci. Lib. Div.
Legarda, B. F.
Lorenzo, C. M.
Mercado, J. D.
Monge, Francisco P., c/o Re stampex, Box 322
Nat. Develop. Co., Calle Pr eza Santa Mesa

Philippine Council for U. S. Aid, R. F. C. Bldg.
Philippine Nat. Bank Lib., Escolta
Philippine Nat. Lib., Gen. Ref. Div.
Soriano, E. L.
Univ. of the East, Grad. Sch., 2219 Azcarraga St.
Univ. of the East, Main Lib., Azcarraga St.
Veguillas, M. J.
Wong G. Hong, H.
Yoingco, A. Q.

Quezon City

Univ. of the Philippines Lib., Dilliman
Victoriano, P. B.

SAUDI ARABIA

Bahrain

Fakhroo, K. A.

Dhahran

Arabian Amer. Oil Co., Plan. Div. Gen. Office, AD 849 A6A

SYRIA

Aleppo

Addahr, N. S.

Damascus

Sawwaf, H. A.
U. S. Info. Center, American Legation

THAILAND

Bangkok

Bank of Thailand
Dept. of Econ. Rela., c/o Nibondh & Co., Ltd., P.O.B. 402, 38 New Rd. Sikak Phya Sri
Nat. Econ. Council, Rajdamern Ave.
Pungtragul, C.
Schaaf, C. H.

TURKEY

Ankara

Aktan, R.
Basbakanlik, T. C., Umumi Murakabe Heyeti, Baskanligi
Gokcen, Cemil, Eti Bank
T. C. Merkez Bankasi, Umum Mudurlugu
Sur, F. H.
Taeusch, C. F.
Tarih Enstitusu, Dil Tarih Fakultesi
Turkish Nat. Lib., Yenishehir
Turkiye Cumhuriyeti Ziraat, Bankasi Musavirlik
U. S. Info. Center, American Embassy

Istanbul

Istanbul Universitesei (VG), Iktisat Fakultesi Dekanligi, Beyazit
Kurdes, K.
U. S. Info. Center, American Consulate Gen.
U. S. Info. Center, Br. Office, American Consulate Gen.

UNION OF SOVIET SOCIALIST REPUBLICS

Leningrad

Publichnaja Biblioteka, Sadovaja Ul. 18

Moscow

Biblioteka, Ekonomich Instituta, Glav Pochtamt p/j 899
Biblioteka, Glavnyj pochtamt, Pochtov jaschik 812
Biblioteka, Glavnj Pochtamt, Pochtovyi Jashik 900
Biblioteka CSU SSSR, B. Vusovskij per 2
Centralnaja Biblioteka, Vneshtorga, Ul. Kujbysheva 23
Gosudarstvennaja Biblioteka SSSR, Im Lenina, Ul. Kalinina 3
Gos. Nauck. Bib-ka, Min Vys Obrasovan, Pl. Nogina 2 5 IV P
Inoizdat, Glavnij Pochtamt, Pochtovij Jaschik 36
Institut Ekonomiki, Akad. Nauk, Volkhonka 14
Nauchnaja Biblioteka, Ministerstva Finansov, Ul. Kujbischeva 9
Tekhbibliotcka Gosplana USSR, Okhotnij Rjad 3
VCSPS, Kaluzhskoje Shosse 66

Riga

Biblioteka, Akademi Nauk, Kommunalnaja 4

Tashkent

Biblioteka, Akademi Nauk, Ul. Abdully Tukaeva 1

AFRICA

ALGERIA

Algiers

Bibliothèque de l'Université, rue Michelet

BELGIAN CONGO

Elizabethville

Scholl, Guillaume, c/o BCCBRU

EGYPT

Alexandria

American Ambassador, c/o American Consulate Gen. 17A
Shafei, M. Z.

Cairo

American Ambassador, c/o American Embassy-17
Anglo-Egyptian Bookshop, 165 Sh Mohamed Bey Farid (Ex Emad El Din)
Conn, H. D.
Nat. Bank of Egypt
Toulan, S. I.

Giza

Deif, N. A.
Messiha, W.

ETHIOPIA

Addis Ababa

Luongo, N. A.
Luther, E. W.

GOLD COAST

Achimota

Univ. Col. of the Gold Coast, Univ. Bookshop
Univ. Col. of the Gold Coast, P.O.B. 4

Cape Coast

Carney, D. E.

LIBERIA

Monrovia

U. S. Info. Center, American Embassy

MOROCCO

Rabat

Centre d'Études Juridiques, Institut des Hautes Études Morocaines
U. S. Info. Center, American Consulate

Tangier

U. S. Info. Center, American Legation

NIGERIA

Ibadan

Univ. Col. Lib.

PORTUGUESE EAST AFRICA

Nova Lusitania

de Abreu, L. S.

Lourenco-Marques

Vasconcellos, A. S.

SUDAN

Khartoum

Gordon Mem. Col., Newbold Lib.

UGANDA

Kampala

Makerere Col. Lib., P.O.B. 262

UNION OF SOUTH AFRICA

Belfast

deBeer, D. P., P.O.B. 6

Bloemfontein

Univ. Col. of the Orange Free State Lib.

Cape Town

Com. and Law Lib., Hiddingh Hall, Orange St., Gardens
de Oliveira, G., 7 Scott Rd. Observatory
Gurzynski, Z. S.
Lib. of Parliament
U. S. Info. Center, American Consulate Gen.

Durban

Allan, I.
Kelly, T. H.
Randall, R. J.

Grahamstown

Rhodes Univ. Col. Lib.

Johannesburg

Federale Volksbeleggins Beperk, Posbas 2911
Johannesburg Ch. of Com., Box 687
Johannesburg Pub. Lib., Market Sq.
Lazerus, J. D., 703 Zarann Mansions, Cor. Bok and Claim Sts., Joubert Pk.
Nat. Develop. Found. of S. A., Locarno House Second Floor, 20 Loveday St.
Richards, C. S.
Samuels, L. H.
Timmerman, W. A.
U. S. Info. Center, American Consulate Gen.
Univ. of the Witwatersrand, Main Lib., Milner Pk.

Potchefstroom

Potchefstroom Univ. Col. for C. H. E. Lib.

Pretoria

Chief, Div. of Econ. and Markets, Dept. of Agric. and Forestry
Geldenhuys, F. E., 324 Orient St.
Goudriaan, I. J.
Middleton, J. J. I.
Secy. for Com. and Ind., Impala House
Soc. and Econ. Plann. Council, Secy., Bourke Trust Bldg. Room 20, Andries St.
S. A. Res. Bank, Head Office
Univ. of Pretoria Lib.
Univ. of S. A., Div. of External Studies, Central St.
Volkskas, Ltd., Secy., Box 578

Stellenbosch

Univ. Lib.

Australasia and the Pacific Islands

AUSTRALIA

AUSTRALIAN CAPITAL TERRITORY

Canberra

Australian Nat. Univ. Lib., Acton
Canberra Univ. Col. Regist., P.O.B. 197
Commonwealth Parliament Lib.
Dept. of External Affairs Lib.
Dept. of Nat. Develop. Lib.
Prime Minister's Dept. Lib., Econ. Policy Div.
Richardson, J. ff.
Tax. Dept., West Block

NEW SOUTH WALES

Adamstown

McMartin, A.

Alexandria

Coghlan, John, Eustan Rd.

Armidale

New England Univ. Col., Secy.

Croydon

Fraser, T., 72 George's River Rd.

Dee Why

Spinks, R., 16 Vi

Drummoyne

Wood, A. W., 15. toria St.

Griffith

Livanes, V., Box 1

Moree

Cummins, B. L., 1

Mortdale

Smith, A., 34 Dar

Sydney

Bank of New So Econ. Dept., P.C Gen. P.O.
Bur. of Statis., Go 61 Hunter St.
Butlin, S. J.
Dept. of Agric. L Place, P.O.B. 36
Kirkland, G.
Laffer, K.
Liberal Party of Box 1925 GPO
New South Wales
Rofe, R. L.
Swain, G., 11 C Rhodes
Sydney Tech. Col. L St. Ultimo
U. S. Info. Center, Consulate Gen.
Univ. of Sydney,
Univ. of Sydney, holme Lib., Sch.

QUEENSLA

Brisbane

Brisbane Pub. Lib St.
Bur. of Ind. Lib., T
Univ. of Queenslan
Univ. of Queenslan Lucia
Univ. of Queenslan Thatcher Mem. Lucia

SOUTH AUST

Adelaide

Univ. of Adelaide, 1 Lib.

TASMANI

Hobart

Firth, G. G.
State Lib. of Tasma

VICTORIA

Carlton

Univ. of Melbourne, Central Lib.
Chernick, S. E.

Melbourne

Commonwealth Inst. of Accountants, Provident Life Assur. Bldg., 37 Queen St.
Inst. of Pub. Affairs, Carlow House, 289 Flinders Lane
Prest, W.
Pub. Lib. of Victoria
State Parliamentary Lib.
U. S. Info. Center, American Consulate

WESTERN AUSTRALIA

Nedlands

Univ. of Western Australia Lib.

Perth

Mauldon, F. R. E.

NEW ZEALAND

Auckland

Auckland Univ. Col., Regist.

Christchurch

Canterbury Univ. Col. Lib.

Dunedin

Otago Univ. Lib.

Motueka

Jeffery, S.

Palmerston North

Massey Agric. Col. Lib.

Wellington

Dept. of Ind. and Com., P.O.B. 3025
Gen. Assembly Lib.
Nat. Lib. Ser., Dir., Private Bag
Prime Minister's Dept., Info. Sec., Parliament Bldgs.
Res. Bank of New Zealand Lib.
U. S. Info. Center, American Embassy
Victoria Univ. Col. Lib., P.O.B. 1580

SUPPLEMENTARY INFORMATION AND STATISTICAL SUMMARIES

OFFICERS OF THE ASSOCIATION*

1949–53

	1949	*1950*	*1951*	*1952*	*1953*
President	Howard S. Ellis	Frank H. Knight	John H. Williams	Harold A. Innis	Calvin B. Hoover
Vice-Presidents	Gottfried Haberler Theodore W. Schultz	Edward S. Mason Clair Wilcox	Corwin D. Edwards Donald H. Wallace	Arthur F. Burns Wassily W. Leontief	Eveline M. Burns P. T. Ellsworth
Secretary-Treasurer	James W. Bell	James W. Bell	James W. Bell	James W. Bell	James W. Bell
Managing Editor of the AMERICAN ECONOMIC REVIEW	Paul T. Homan	Paul T. Homan	Paul T. Homan	Bernard F. Haley	Bernard F. Haley
Elected Members of the Executive Committee	Ben W. Lewis Arthur R. Upgren Bernard F. Haley Richard A. Lester Arthur F. Burns Paul A. Samuelson	Bernard F. Haley Richard A. Lester Arthur F. Burns Paul A. Samuelson Lester V. Chandler Robert A. Gordon	Arthur F. Burns Paul A. Samuelson Lester V. Chandler Robert A. Gordon John B. Condliffe Albert G. Hart	Lester V. Chandler Robert A. Gordon John B. Condliffe Albert G. Hart Kenneth E. Boulding Lloyd G. Reynolds	John B. Condliffe Albert G. Hart Kenneth E. Boulding Lloyd G. Reynolds Gerhard Colm David M. Wright
Counsel	John E. Walker	John E. Walker	John E. Walker	John E. Walker	John E. Walker

* For the list of officers from 1886 through 1948, see the 1948 *Directory*, pages 295–304.

ROSTERS OF COMMITTEE MEMBERS AND EDITORIAL BOARDS

NOMINATING COMMITTEE*

1949–53

1949	Simeon E. Leland, Chairman James K. Hall Margaret G. Reid Lloyd G. Reynolds Edward C. Simmons Wolfgang F. Stolper
1950	Calvin B. Hoover, Chairman Harold R. Bowen Carter Goodrich Elizabeth E. Hoyt Alfred C. Neal Jacob Viner
1951	Howard S. Ellis, Chairman Karl R. Bopp George A. Elliott Charles P. Kindleberger Lloyd A. Metzler William H. Nicholls
1952	Frank H. Knight, Chairman Anne Bezanson George H. Hildebrand Frank A. Knox Donald H. Wallace Clair Wilcox
1953	John H. Williams, Chairman M. M. Bober Edward S. Shaw George W. Stocking George W. Taylor Willard L. Thorp

* For list of members 1934–48, see page 305 of the 1948 *Directory*.

COMMITTEE ON ELECTIONS*

1934–52

1934	Frederick S. Deibler, Chairman Ernest L. Bogart Morris A. Copeland
1935	Chester W. Wright, Chairman Reuben Cahn
1936	Ivan Wright, Chairman John Higson Cover
1937	Melchior Palyi, Chairman Frank P. Breckinridge
1938	Donald R. Cowan, Chairman Albert G. Hart Lloyd W. Mints
1939	Reuben D. Cahn, Chairman Frederick W. Mueller, Jr.
1940	Henry C. Simons, Jr., Chairman Elmo P. Hohman
1941	Morton Bodfish, Chairman Melchior Palyi
1942	Leverett S. Lyon, Chairman Simeon E. Leland
1943	Garfield V. Cox, Chairman Arthur R. Tebbutt
1944	John W. Boatwright, Chairman Earl J. Hamilton
1945	John K. Langum, Chairman Henry B. Arthur
1946	John H. Wills, Chairman Walter E. Hoadley, Jr.
1947	Ernest A. Johnson, Chairman Charles W. Anrod
1948	J. Roy Blough, Chairman Ernst A. Dauer
1949	Lloyd A. Metzler, Chairman Frank W. Fetter
1950	Walter A. Weisskopf, Chairman Louis A. Keller
1951	Harry G. Guthmann, Chairman Robert T. Glidden
1952	Donald S. Warning, Chairman Harold W. Torgerson

* The Secretary is ex officio member of the Committee on Elections. For 1935, this was Frederick S. Deibler; from 1936 on, James Washington Bell.

PROGRAM COMMITTEE*

1949–1953

1949	Howard S. Ellis, Chairman†
1950	Frank H. Knight, Chairman†
1951	John H. Williams, Chairman†
1952	Harold A. Innis, Chairman† Arthur F. Burns

* For list of members 1934–48, see page 307 of the 1948 *Directory*.
† No formal committee appointed.

EDITORIAL BOARDS
1935–53

1935 A. B. Wolfe
C. Goodrich
F. G. Blakey
H. H. Preston
C. E. Ayres
M. A. Copeland

1936 F. G. Blakey
H. H. Preston
C. E. Ayres
M. A. Copeland
E. Berman
E. H. Chamberlin

1937 C. E. Ayres
M. A. Copeland
E. Berman
E. H. Chamberlin
Alzada Comstock
L. L. Watkins

1938 E. Berman*
Fritz Machlup
Alzada Comstock
L. L. Watkins
A. R. Burns
B. F. Haley

1939 Alzada Comstock
L. L. Watkins
A. R. Burns
B. F. Haley
R. E. Montgomery
Fritz Machlup

1940 A. R. Burns
B. F. Haley
R. E. Montgomery
Fritz Machlup
E. A. Kincaid
H. M. Groves

1941 R. E. Montgomery
Fritz Machlup
E. A. Kincaid
H. M. Groves
H. S. Ellis
B. W. Lewis

1942 E. A. Kincaid
Mabel Newcomer
H. S. Ellis
B. W. Lewis
A. G. Hart
Dale Yoder

1943 H. S. Ellis
B. W. Lewis
A. G. Hart
Dale Yoder
G. N. Halm
Mabel Newcomer

1944 A. G. Hart
Dale Yoder
G. N. Halm
Mabel Newcomer
N. S. Buchanan
P. A. Samuelson

1945 G. N. Halm
Mabel Newcomer
N. S. Buchanan
P. A. Samuelson
K. E. Boulding
P. T. Ellsworth

1946 N. S. Buchanan
P. A. Samuelson
K. E. Boulding
P. T. Ellsworth
L. H. Seltzer
B. U. Ratchford

1947 K. E. Boulding
P. T. Ellsworth
L. H. Seltzer
B. U. Ratchford
R. A. Gordon
Arthur Smithies

1948 L. H. Seltzer
B. U. Ratchford
R. A. Gordon
Arthur Smithies
F. H. Harbison
G. J. Stigler

1949 R. A. Gordon
Arthur Smithies
F. H. Harbison
G. J. Stigler
R. A. Musgrave
W. H. Nicholls

1950 F. H. Harbison
G. J. Stigler
R. A. Musgrave
W. H. Nicholls
Moses Abramovit[z]
William Fellner

1951 R. A. Musgrave
W. H. Nicholls
Moses Abramovit[z]
William Fellner
Milton Friedman
L. G. Reynolds

1952 Moses Abramovit[z]
William Fellner
Milton Friedman
L. G. Reynolds
J. S. Bain
H. M. Somers

1953 Milton Friedman
L. G. Reynolds
J. S. Bain
H. M. Somers
R. F. Mikesell
Ragnar Nurkse

* Died in June, 1938; unexpired term filled by Royal E. Montgomery.

REPRESENTATIVES OF THE ASSOCIATION TO THE LEARNED COUNCILS*

AMERICAN COUNCIL OF LEARNED SOCIETIES, 1949–53

1949–50 Frank H. Knight

1951–54 Frank H. Knight

Note: Reorganization of the American Council of Learned Societies provided for one representative only, appointed for a four-year term.

SOCIAL SCIENCE RESEARCH COUNCIL, 1949–53

1949 Harold A. Innis
Joseph J. Spengler
George W. Stocking

1950 Joseph J. Spengler
George W. Stocking
Harold A. Innis

1951 George W. Stocking
Harold A. Innis
Theodore W. Schultz

1952 Harold A. Innis
Theodore W. Schultz
George W. Stocking

1953 Theodore W. Schultz
George W. Stocking
John Perry Miller

REPRESENTATIVES ON THE BOARD OF DIRECTORS OF THE NATIONAL BUREAU OF ECONOMIC RESEARCH

1920–39 David Friday
1940–44 C. Reinold Noyes
1945–53 Donald H. Wallace

* For lists of representatives, 1920–48, see page 308 of the 1948 *Directory*.

HONORARY MEMBERS

Albert Aftalion *1938*..................Paris
William Beveridge (Baron Beveridge of Tuggal) *1945*..................London
Arthur L. Bowley *1932*..................London
Constantino Bresciani-Turroni *1951*...Rome
Sir Henry Clay *1932*..................Oxford
L. Einaudi *1926*..................Rome
Ragnar Frisch *1948*..................Oslo
R. F. Harrod *1950*..................Oxford
Ralph G. Hawtrey *1948*..................London
J. R. Hicks *1950*..................Oxford
Gaston Jéze *1926*..................Paris
Walter Thomas Layton (Baron Layton of Danehill) *1932*..................London
Gunnar Myrdal *1947*..................Geneva
Bertil Ohlin *1947*..................Stockholm
Arthur Cecil Pigou *1922*..................Cambridge
Charles Rist *1922*..................Paris
Lionel C. Robbins *1947*..................London
D. H. Robertson *1938*..................Cambridge
Joan Robinson *1950*..................Cambridge
Arthur A. C. Spiethoff *1932*..................Bonn
Jan Tinbergen *1950*..................The Hague

Note: The figures in italics indicate the year of election to honorary membership.

ANNUAL MEETINGS

1936–55

NOTE: A tabulation of "Statistics of Annual Meetings" from 1885 to 1910 may be fou in the papers and discussions on the occasion of the twenty-fifth anniversary of the Associati published in the "Third Series" of the publications of the Association (Vol. XI, 1910, No. pages 92–93). This tabulation gives not only the date and place of meeting but also indica main subjects discussed and the number of members of the Association. The list of cities which annual meetings have been held 1910 through 1935 may be found on page 306 of 1948 *Directory.*

The following list includes estimates of registration. These figures are very rough, but th give a general idea of how many members of the American Economic Association attend meetings and of the total attendance of all the affiliated associations. Some figures are estima of attendance, which includes students and those not registering, and other figures are p registrations.

Year	*Place*	*Local Arrangements Chairman or Representative*	*A.E.A.*	*Total*
1936	Chicago	G. V. Cox	760	2,93
1937	Atlantic City	E. M. Patterson	687	2,07
1938	Detroit	R. P. Briggs	671	2,34
1939	Philadelphia	W. N. Loucks	793	2,85
1940	New Orleans	R. W. Elsasser	358	69
1941	New York	C. S. Shoup	1,029	3,76
1942	Washington, D.C. (Cleveland canceled)	A. E. Taylor		1,10
1943	Washington, D.C.	A. E. Taylor		1,92
1944	Washington, D.C. (Canceled)	J. Donaldson M. Gilbert		
1945	Cleveland	D. A. Hill R. L. Davison	566	93
1946	Atlantic City	J. W. Hoot		1,70
1947	Chicago	G. J. Cady	1,202	1,43
1948	Cleveland	D. S. Thompson	1,114	1,68
1949	New York	M. R. Gainsbrugh	1,839	3,57
1950	Chicago	C. G. Wright	1,413	3,45
1951	Boston	A. C. Neal	1,091	2,94
1952	Chicago	R. T. Glidden	1,897	2,72
1953	Washington, D.C.	R. A. Young		
1954	Detroit			
1955	New York			

ORGANIZATIONS WITH WHICH THE AMERICAN ECONOMIC ASSOCIATION IS AFFILIATED

American Council of Learned Societies

1219 16th Street, N.W., Washington 6, D.C.

Administrative Secretary, Mortimer Graves; *Assistant to the Director,* D. H. Daugherty; *Staff Adviser on Personnel Studies,* J. F. Wellemeyer; *Secretary for Fellowships,* William A. Parker; *Special Assistant,* Shirley D. Hudson; *Bursar,* Alice M. Harger.

Delegate of the American Economic Association: Frank H. Knight, 1954.

Constituent Societies: American Philosophical Society, American Academy of Arts and Sciences, American Antiquarian Society, American Oriental Society, American Numismatic Society, American Philological Association, Archaeological Institute of America, Society of Biblical Literature and Exegesis, Modern Language Association of America, American Historical Association, American Economic Association, American Folklore Society, American Philosophical Association, American Anthropological Association, American Political Science Association, Bibliographical Society of America, Association of American Geographers, American Sociological Society, College Art Association of America, History of Science Society, Linguistic Society of America, Mediaeval Academy of America, American Musicological Society, American Society for Aesthetics.

Social Science Research Council

230 Park Avenue, New York 17, New York

Officers and Staff: Pendleton Herring, *President;* Paul Webbink, *Vice-President;* Elbridge Sibley, *Executive Associate;* Harold E. Jones, *Pacific Coast Representative;* Bryce Wood; Eleanor C. Isbell; Joseph B. Casagrande; M. Brewster Smith; Carolyn E. Allen, *Financial Secretary.*

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National Bureau of Economic Research

1819 Broadway, New York 23, New York

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REGIONAL AND ALLIED ASSOCIATIONS

Midwest Economics Association

Officers, 1953–54

President, Walter A. Morton, University of Wisconsin. *First Vice-President*, Earl D. Stro Grinnell College. *Second Vice-President*, Harold W. Davey, Iowa State College. *Secreta Treasurer*, C. Woody Thompson, University of Iowa.

The Midwest Economics Association was founded in 1934 and has held annual meetings April each year since. The programs begin Thursday evening and extend through Saturc forenoon. The area embraces Indiana, Illinois, Missouri, Kansas, Iowa, Nebraska, No Dakota, South Dakota, Minnesota, and Wisconsin. Scattered representation also comes fr the states of Michigan and Ohio. The organization is informal. Any person engaged in full-ti teaching or research, or graduate study, or graduate study and research or teaching in the fi of economics or commerce is eligible for membership. A registration fee of $1.00 is paid by th in attendance in lieu of a membership fee. The Association sponsors no publication. The ann program is prepared and the place of meeting is chosen by the Executive Committee, consist of the President, two Vice-Presidents, Secretary-Treasurer, and the immediate past preside

The 1954 meeting will be held in Peoria, Illinois, April 22–24, with headquarters at H Pere Marquette.

Past Presidents

1934	S. L. Miller, University of Iowa
1935	M. H. Hunter, University of Illinois (deceased)
1936	Dale Yoder, University of Minnesota
1937	J. A. Estey, Purdue University
1938	John Ise, University of Kansas
1939	W. Bayard Taylor, University of Wisconsin
1940	J. E. Kirshman, University of Nebraska (deceased)
1941	Harry Gunnison Brown, University of Missouri
1942–46	Jesse S. Robinson, Carleton Coll
1947	C. L. Christenson, Indiana U versity
1948	Roy Blough, University of Chic
1949	C. Ward Macy, Coe College
1950	M. M. Bober, Lawrence College
1951	Paul R. Olson, University of Ic
1952	Frank W. Fetter, Northwest University
1953	H. Gordon Hayes, Ohio State U versity

Southern Economic Association

Officers, 1953

President, B. U. Ratchford, Duke University. *Vice-Presidents*, J. B. McFerrin, University Florida, R. W. French, Tulane University. *Secretary-Treasurer*, Howard R. Smith, U versity of Georgia.

The Southern Economic Association was organized in 1927. The purpose of the Associatio the stimulation of economic thought and research in connection with the economic proble of the South.

Membership dues are: annual, $4.00; sustaining, $5.00; contributing, $10.00; life, $60. institutional, $10.00; student, $2.00. Membership fees include $3.00 in payment for a ye subscription to the *Southern Economic Journal* at the special rate granted to members of Southern Economic Association. The *Journal* is a quarterly, published jointly by the Associat and the University of North Carolina.

Past Presidents

1928–30	Walter J. Matherly, University of Florida
1930–31	Lee Bidgood, University of Alabama
1931–32	Tipton R. Snavely, University of Virginia
1932–33	J. B. Trant, Louisiana State University
1933–34	R. P. Brooks, University of Georgia
1934–35	A. S. Keister, Woman's College, N. C.
1935–36	J. W. Martin, University of Kentucky
1936–37	C. B. Hoover, Duke University
1937–38	T. C. Bigham, University of Flo
1938–39	R. H. Tucker, Washington and University
1939–40	J. B. Woosley, University of Nc Carolina
1940–41	Ralph C. Hon, Southwestern U versity
1941–42	Malcolm H. Bryan, Federal serve Bank of Atlanta
1942–43	Edgar Z. Palmer, University Kentucky
1943–44	D. Clark Hyde, University of ginia

1944–45	T. W. Glocker, University of Tennessee	1948–49	G. H. Aull, Clemson College
1945–46	H. L. McCracken, Louisiana State University	1949–50	D. M. Wright, University of Virginia
1946–47	Joseph J. Spengler, Duke University	1950–51	J. E. Ward, George Peabody College
1947–48	G. T. Schwenning, University of North Carolina	1951–52	G. W. Stocking, Vanderbilt, University

Western Economic Association

Officers, 1953

President, M. M. Stockwell, University of California (Los Angeles). *Vice-President*, C. E. Maser, Oregon State College. *Secretary-Treasurer*, John Pagani, University of Utah. *Editor*, F. L. Kidner, University of California (Berkeley).

The Western Economic Association (formerly the Pacific Coast Economic Association) was established in 1922 largely through the efforts of Alfred C. Schmitt, Edwin C. Robbins, Stephen I. Miller and Eliot Jones. The first meeting was held in Portland, Oregon. Membership is of two kinds: (1) institutional members, originally confined to accredited universities and colleges west of the Rocky Mountains, but now changed to include any educational institution approved by the Executive Committee, west of the Rockies; (2) individual members, who may be any person interested in the theory, principles and problems of economics and business. In addition to the professional economists, many Pacific Coast businessmen are members.

One of the principles of the W.E.A. is to devote approximately one-third or more of each annual conference to problems of the Pacific Slope; another is to co-operate with the efforts of the Social Science Research Council.

The membership of the Association as of September 1, 1952 was 409. Institutional dues are $10.00 and $5.00, depending upon size of the institution; individual membership is $3.00 yearly. The principal publication is the annual proceedings.

Past Presidents

1922	Alfred C. Schmitt, Oregon State College	1938	James K. Hall, University of Washington
1923	Eliot Jones, Stanford University	1939	Richard B. Heflebower, Washington State College
1924	Rockwell D. Hunt, University of Southern California	1940	Arthur G. Coons, Claremont Colleges
1925	Howard T. Lewis, University of Washington	1941	Robert D. Calkins, University of California
1926	Edwin C. Robbins, University of Oregon	1942	Bernard F. Haley, Stanford University
1927	Theodore H. Boggs, University of British Columbia	1943–45	James H. Gilbert, University of Oregon
1928	Ira B. Cross, University of California	1946	John B. Condliffe, University of California
1929	Howard S. Noble, University of California at Los Angeles	1947	William S. Hopkins, University of Washington
1930	Thomas A. Beal, University of Utah	1948	Robert B. Pettengill, University of Southern California
1931	John A. Bexell, Oregon State College	1949	Glenn E. Hoover, Mills College
1932	Shirley J. Coon, University of Washington	1950	Dilworth Walker, University of Utah
1933	Clement Akerman, Reed College	1951	John A. Guthrie, State College of Washington
1934	Reid L. McClung, University of Southern California	1952	Oliver P. Wheeler, Federal Reserve Bank of San Francisco
1935	W. L. Wanlass, Utah State College		
1936	Kenneth Duncan, Pomona College		
1937	John B. Canning, Stanford University		

Metropolitan Economic Association

Officers, 1953–54

President, Lawrence Chenault, Hunter College. *Vice-President*, Harry Malisoff, Brooklyn College. *Secretary*, Aurelia Toyer, New York University. *Treasurer*, Robert D. Leiter, City College.

The Metropolitan Economic Association was formed in the spring of 1949 when a group of

college teachers of economics in the metropolitan New York area met to organize a confere on the teaching of the basic course in economics. The conference became the Metropoli Economic Association. The object of the Association is to encourage and organize the express of diverse views on matters of interest to academic and nonacademic economists. Meetings held four times yearly for the purpose of such discussions.

Membership is open to those who teach economics in colleges, to nonacademic professic economists, and to graduate students majoring in economics. Dues are $1.00 annually. membership of the Association as of May, 1953, was 150.

Past Presidents

1950–51 Broadus Mitchell, Rutgers University
1951–52 Charles Hessian, Brooklyn College
1952–53 David H. Colin, New York U versity

CENTRAL NEW YORK ECONOMICS CONFERENCE

Officers, Fall Meeting, 1953

President, Raymond de Roover, Wells College. *Secretary-Treasurer*, Dorothy Watson, W College.

The Central New York Economics Conference was organized in 1948. The purpose of Conference is to enable its members to discuss mutual problems of teaching and to excha views on current economic issues.

The Conference meets twice a year and is financed by a small registration fee paid at the t of each meeting. The meeting place of the Conference is rotated among the various colleges universities of its members.

Past Presidents

1948 Spring Meeting—Wilfrid Crook, Colgate University
Fall Meeting—William Kessler, Colgate University
1949 Spring Meeting—Archibald M. McIsaac, Syracuse University
Fall Meeting—William E. Dunkman, University of Rochester
1950 Spring Meeting—William W. Bennett, Union College
Fall Meeting—N. Arnold Tolles, Cornell University
1951 Spring Meeting—Kirk R. Petshek, Colgate University
Fall Meeting—G. Ralph Smith, Harpur College
1952 Spring Meeting—Theo Suranyi-Unger, Syracuse University
Fall Meeting—Ralph C. Epstein, University of Buffalo
1953 Spring Meeting—William E. Dunkman, University of Rochester

ECONOMIC HISTORY ASSOCIATION

Officers, 1952–54

President, Edward C. Kirkland, Bowdoin College. *Vice-Presidents*, Alexander Gerschenk Harvard University, Robert L. Reynolds, University of Wisconsin. *Secretary*, Ralph Hidy, New York University. *Treasurer*, Herman E. Krooss, New York University. *B of Trustees*, The Officers of the Association, the Editor of the *Journal*, Arthur Bin University of Pennsylvania, W. Thomas Easterbrook, University of Toronto, Solo Fabricant, New York University, John G. B. Hutchins, Cornell University, Arthu Peterson (representing the Agricultural History Society), Henrietta M. Larson (repres ing the Business Historical Society), and *Past Presidents*, Anne Bezanson, Universit Pennsylvania, Herbert Heaton, University of Minnesota, Earl J. Hamilton, Universit Chicago. *Editor*, Thomas C. Cochran, University of Pennsylvania. *Advisory Editor*, Sl ard B. Clough, Columbia University. *Associate Editors*, Miriam Hussey, Universit Pennsylvania, Daniel Thorner, University of Pennsylvania.

The Economic History Association was founded in December, 1940. It is open to all hist ans, statisticians, economists, and businessmen who find profit from historical investigati It publishes semiannually the *Journal of Economic History*. Annual meetings are held in S tember and semiannual meetings in conjunction with the American Historical Association the American Economic Association.

Membership dues, which include subscriptions to the *Journal*, are: American and Canad members, $5.00; foreign members, $5.25; sustaining members, $10.00; and student memb $3.00.

Allied Social Science Associations

The Secretaries of Which Are Formally Organized in the Interests of Conducting Joint Annual Meetings

1953

	Presidents	Secretaries
American Accounting Association	R. H. Hassler, Harvard University	C. J. Gaa, University of Illinois
American Association of University Teachers of Insurance	Clyde Kahler, University of Pennsylvania	W. T. Beadles, Wesleyan University, Illinois
American Business Law Association	P. C. Roberts, University of Illinois	M. B. Dickerson, Michigan State College
American Economic Association	C. B. Hoover, Duke University	J. W. Bell, Northwestern University
American Farm Economic Association	H. R. Wellman, University of California, Berkeley	E. L. Butz, Purdue University
American Finance Association	R. I. Robinson, Northwestern University	G. E. Hassett, Jr., New York University
American Marketing Association	G. A. Hughes, General Mills, Inc.	I. D. Anderson, Northwestern University
American Political Science Association	Pendleton Herring, S.S.R.C.	E. H. Litchfield, Washington, D.C.
American Sociological Society	S. A. Stouffer, Harvard University	J. W. Riley, Jr., New York University
American Statistical Association	W. G. Cochran, Johns Hopkins University	Samuel Weiss, Washington, D.C.
Econometric Society	Rene Roy, University of Paris	Alfred Cowles, University of Chicago
Economic History Association	E. C. Kirkland, Bowdoin College	R. W. Hidy, New York University
Industrial Relations Research Association	Ewan Clague, Bureau of Labor Statistics	R. W. Fleming, University of Illinois
Institute of Mathematical Statistics	M. H. Hansen, Bureau of the Census	K. J. Arnold, Michigan State College
Rural Sociological Society	O. D. Duncan, Oklahoma A. and M. College	S. W. Blizzard, Pennsylvania State College

Tabular Summary

TABLE 1

MEMBERSHIP CLASSES
(at the Midyear)

	1941	*1946*	*1948*	*1953*
Annual	3,176	4,144	5,163	6,709
Junior	83	90	404	449
Family	14	64	92	132
Complimentary	15	17	27	43
Honorary	19	15	14	22
Life	37	31	29	60
Total members	3,344	4,361	5,729	7,415

TABLE 2

MEMBERS AND SUBSCRIBERS FOR SELECTED YEARS
(Year-end Figures)

Year	*Members*	*Subscribers*	*Total*
1886			182
1890			635
1895	572	80	652
1900			802
1905	877	155	1,032
1910	1,519	183	1,702
1915	2,091	353	2,444
1920	2,301	565	2,866
1925	2,916	830	3,746
1930	2,797	1,056	3,853
1935	2,544	1,118	3,662
1940	3,158	1,327	4,485
1941	3,465	1,319	4,784
1942	3,671	1,219	4,890
1943	3,798	1,293	5,091
1944	3,961	1,533	5,494
1945	4,154	1,752	5,906
1946	4,662	2,161	6,823
1947	5,329	2,198	7,527
1948	5,902	2,461	8,363
1949	6,631	2,504	9,135
1950	6,936	2,573	9,514
1951	7,068	2,692	9,760
1952	7,267	2,755	10,022

TABLE 3

GEOGRAPHICAL ANALYSIS OF MEMBERS AND SUBSCRIBERS IN THE UNITED STATES
(As of April 15, 1953)

States	Members	Subscribers	Total
NORTHEAST			
Maine	20	7	27
New Hampshire	25	7	32
Vermont	26	8	34
Massachusetts	349	67	416
Rhode Island	21	7	28
Connecticut	131	33	164
New York	1,312	232	1,544
Delaware	19	8	27
Pennsylvania	341	84	425
New Jersey	245	46	291
Maryland	348	25	373
West Virginia	28	13	41
District of Columbia	697	93	790
	3,562	630	4,192
MIDDLE			
Ohio	302	63	365
Michigan	240	51	291
Indiana	132	32	164
Wisconsin	138	31	169
Minnesota	86	39	125
Iowa	77	26	103
Missouri	105	36	141
Illinois	573	88	661
	1,653	366	2,019
SOUTHWEST			
Oklahoma	40	17	57
Texas	111	63	174
New Mexico	11	6	17
Arizona	15	4	19
	177	90	267
SOUTHEAST			
Tennessee	44	34	78
North Carolina	65	29	94
Mississippi	13	12	25
Virginia	365	31	396
Kentucky	41	17	58
South Carolina	13	11	24
Georgia	41	22	63
Alabama	32	25	57
Arkansas	22	12	34
Florida	76	20	96
Louisiana	49	17	66
	761	230	991
NORTHWEST			
North Dakota	13	8	21
South Dakota	9	9	18
Nebraska	34	14	48
Kansas	41	23	64
Montana	15	8	23
Colorado	44	13	57
Wyoming	4	4	8
Idaho	9	4	13
Utah	14	8	22
	183	91	274
FAR WEST			
Oregon	41	18	59
Washington	79	31	110
California	458	112	570
Nevada	6	3	9
	584	164	748

SUMMARY

	Members	Subscribers	Total
Northeast	3,562	630	4,192
Middle	1,653	366	2,019
Southwest	177	90	267
Southeast	761	230	991
Northwest	183	91	274
Far West	584	164	748
APO and FPO	34	17	51
	6,954	1,588	8,542
	Members	Subscribers	Total

TABLE 4

GEOGRAPHICAL ANALYSIS OF MEMBERS AND SUBSCRIBERS FOR SELECTED YEARS
UNITED STATES AND FOREIGN

	United States and Possessions									Other Countries							
	N.E.	Middle	S.E.	S.W.	N.W.	Far West	Possessions	A.P.O. F.P.O.	U.S. Total	Europe	Africa	Australasia	No. Amer.	Cent. Amer.	So. Amer.	Foreign Total	Grand Total
1933																	
Members	1,353	596	125	57	83	166	—		2,380	65	6	27	37	3	3	141	2,521
Subscribers	237	180	78	47	55	70	7		674	109	6	132	25	2	7	281	955
Total	1,590	776	203	104	138	236	7		3,054	174	12	159	62	5	10	422	3,476
1940																	
Members	1,686	712	278	59	110	192	7		3,044	58	4	9	34	2	2	109	3,153
Subscribers	329	246	126	55	63	100	16		935	95	13	131	32	5	12	288	1,223
Total	2,015	958	404	114	173	292	23		3,979	153	17	140	66	7	14	397	4,376
1943																	
Members	2,098	706	422	95	115	211	12		3,659	35	5	4	39	4	11	98	3,757
Subscribers	396	270	160	65	70	100	7		1,068	26	11	37	36	3	22	135	1,203
Total	2,494	976	582	160	185	311	19		4,727	61	16	41	75	7	33	233	4,960
1947																	
Members	2,834	1,068	516	103	138	324	10	32	5,025	69	9	16	74	21	8	197	5,222
Subscribers	564	340	190	75	81	137	18	64	1,469	262	31	185	64	96	30	668	2,137
Total	3,398	1,408	706	178	219	461	28	96	6,494	331	40	201	138	117	38	865	7,359
1950																	
Members	3,443	1,623	683	177	174	502	18	38	6,658	122	12	52	83	22	29	320	6,978
Subscribers	590	368	223	89	84	160	9	76	1,599	390	37	217	55	29	62	790	2,389
Total	4,033	1,991	906	266	258	662	27	114	8,257	512	49	269	138	51	91	1,110	9,367
1953																	
Members	3,562	1,653	761	177	183	584	22	34	6,976	154	19	92	106	27	41	439	7,415
Subscribers	630	366	230	90	91	164	13	17	1,601	483	39	343	65	28	49	1,007	2,608
Total	4,192	2,019	991	267	274	748	35	51	8,577	637	58	435	171	55	90	1,446	10,023

EXHIBIT 1

AMERICAN ECONOMIC REVIEW EXCHANGE LIST

American Academy of Political and Social Science, 3937 Chestnut St., Philadelphia 4, Pa.
American Historical Review, Lib. of Congress Annex, Study Room 274, Washington, D. C.
American Journal of Sociology, Univ. of Chicago, Chicago, Ill.
American Political Science Review, Dupont Circle Bldg., Washington, D. C.
American Review of the Soviet Union, American Russian Inst., 58 Park Ave., New York 16, N. Y.
American Sociological Review, Univ. of Washington, 116-A Smith Hall, Seattle 5, Wash.
American Statistical Association, 1108 16th St., N. W., Washington 6, D. C.
Anales de la Academia de Ciencias Economicas, La Academia de Ciencias Economicas, Buenos Aires, Argentina
Annales de la Faculté de Droit de l'Université de Bordeaux, Université de Bordeaux, Bordeaux, France
Annales de Sciences Économiques Appliquées, Institut des Sciences Économiques Appliquées de l'Univ., 2, Rue des Doyens, Louvain, Belgium
Annales Universitatis Saraviensis, Université de la Sarre, Saarbrucken 2A, The Saar
Annali della Facolta di Economie, Universita di Palermo, Piazza Marina 46, Palermo, Italy
Annals of Social Sciences, Law-Economy-Sociology, Catholic University, Al. Raclawickie 14, Lublin, Poland
Annals of The Hitotsubashi Academy, Hitotsubashi University, Kunitachi, Tokyo, Japan
Archivio Finanziario, Istituto di Finanza dell'Universita di Ferrara, Ferrara, Italy
Associazione societa italiane per azioni, via Cesare Battisti, 121, Rome, Italy
Aussenwirtschaft, Schweizerisches Institut für Aussenwirtschafts und Marktforschung, Bahnhofplatz 7, St. Gallen, Switzerland
Baker Library, Harvard Univ., Grad. School of Bus. Admin., Soldiers Field, Boston 63, Mass.
Berichte und Informationen, Austrian Res. Inst. for Econ. and Politics, Schwarzstrasse 21, Salzburg, Austria
Biblioteka Uniwersytecka w Warszawie, Warsaw, Poland
Boletin de Estudios Economicos, Universidad Comercial de Deusto, Bilbao, Spain
Bulletin Analytique de Documentation Politique, Économique et Sociale Contemporaine, 27, rue Saint-Guillaume, Paris VII, France
Bulletin Économique du Maroc, Bibliothèque Générale et Archives du Protectorat, Rabat, Morocco
Bulletin of the Inst. of Economics and Law, Académie Bulgare des Sciences, Rue 7 Novembre 1, Sofia, Bulgaria
Bulletin of the Oxford University Institute of Statistics, Oxford, England
Bureau of Business Research, Harvard Business School, Soldiers Field, Boston, Mass.
Bureau of Mines, Dept. of the Interior, Washington, D. C.
Canadian Journal of Economics and Political Science, 273 Bloor St. W., Toronto, Ont., Canada
Central Statistical Office, Narbutta 33, Warsaw, Poland
Chambre de Commerce de Paris, 27, Ave. de Friedland, Paris (8), France
Commission Interimaire de l'Organisation Internationale du Commerce, Palais des Nations, Geneva, Switzerland
Conjuntura Economica, Fundacao Getulio Vargas, Caixa Postal 4,081, Rio de Janeiro, Brazil
Contador General de la Nacion don Raul A. Previtali, Calle Colonia 1089, Montevideo, Uruguay, S. A.
Critica Economica, Centro Economico per la Ricostruzione, Via Palestro, 68, Rome, Italy
De Economia, Departamento de Politica Comercial, Alfonso XII No. 34, Madrid, Spain
De Economist, Haarlem, Holland
Documentation Economique, Institut National de la Statistique et des Études Économique, 29 Quai Branley, Paris (7), France
Dun's Review, 290 Broadway, New York, N. Y.
Econometrica, Econometric Society, Univ. of Chicago, Chicago, Ill.
Economia Internazionale, Inst. for Int. Econ. Res., Via Garibaldi 4, Genoa, Italy
Economic Journal, Marshall Lib., Downing St., Cambridge, England
Economic Record, The University, Melbourne, N. 3, Victoria, Australia
Ekonomisk Tidskrift, Malmtorgsgatan 8, Stockholm 16, Sweden
Ekonomiska Samfundets Tidskrift, 7 Kronbergsgatan, Helsingfors, Finland
El Trimestre Economico, El Fondo de Cultura Economica, Panuco 63, Mexico, D.F.
Estadistica, Francisco de Abrisqueta, c/o Pan American Union, Washington 6, D. C.
Europa-Archiv, Verlag Europa-Archiv, Hauffstr. 5, Frankfurt/Main, Germany
Far Eastern Quarterly, Cornell Univ. Lib., Ithaca, N. Y.
Far Eastern Survey, 1 E. 54th St., New York 22, N. Y.
Federal Reserve Board, Washington, D. C.
Foreign Affairs, 58 E. 68th St., New York 21, N. Y.
Foreign Policy Association, 22 E. 38th St., New York 18, N. Y.
Genus, 10, via delle Terme di Diocleziano, Rome 30, Italy
Giornale degli Economisti, Universita Commerciale Luigi Bocconi, Milan, Italy
Gulich, Prof. Dr. W., Bibliothek des Institute fur Weltwirtschaft, Univ. of Kiel, Kiel, Germany
Hamburgisches Welt-Wirtschafts-Archiv, Poststrasse 11, Hamburg 36, Germany
Hermes, École de Commerce de Laval, Laval Université, P.O. Box 640, Quebec, Que., Canada
The Hikone Ronso, Inst. for Econ. Res., Shiga Univ., Hikone-city, Shiga-ken, Japan
India Quarterly, Indian Council of World Affairs, 8A, Kashi House, Connaught Place, New Delhi, India
Indian Economic Review, Univ. of Delhi, Delhi Sch. of Econ., Delhi 9, India
Indian Journal of Commerce, Commerce Dept., The Univ., Allahabad, India
Indian Journal of Economics, The Univ., Allahabad, India
Indian Journal of Statistics, Indian Statis. Inst., Statis. Laboratory, 204 B T Rd., Calcutta 35, India
Industrial and Labor Relations Review, New York State Sch. of Ind. and Labor Rela., Cornell Univ., Ithaca, N. Y.
Institut de Recherches Économiques et Sociales, Pl. Monseigneur Ladeuzo, Louvain, Belgium
Institut für Wirtschaftsforschung, Rosenheimerstr. 130, Wirtschaftskonjunctur, Munich 8, Germany
Institute of Economics, 26 Jackson Pl., Washington, D. C.
Institute of Social and Economic Research, Univ. College of the West Indies, Mona, Jamaica, B.W.I.
Institute of World Economics and Politics, Volchonka 14, Moscow, U.S.S.R.
International Affairs, Royal Inst. of Int. Affairs, 10 St. James' Sq., London, S.W. 1, England
International Financial Statistics, Res. Dept., Int. Monetary Fund, Washington 25, D. C.
International Labour Office Lib., Geneva, Switzerland
Interstate Commerce Commission, Washington, D. C.
Istituto per gli Studi di Economia, Via Panzacchi 6, Milan 334, Italy
Jahrbuch für Sozialwissenschaft, Hanssenstr. 10, Gottingen, Germany
Jahrbucher für Nationalokonomie und Statistik, Professor Erich Preiser, Grabengasse 14, Heidelberg, Germany
Journal de la Société de Statistique de Paris, 26 blvd Haussmann, Paris 9, France
Journal de la Société Hongroise de Statistique, Buday Laszlo-Utca 1, Budapest II, Hungary

Journal of Business, Univ. of Chicago, Chicago, Ill.
Journal of Economic History, 10 Gilman Hall, Johns Hopkins Univ., Baltimore 18, Md.
Journal of Farm Economics, Michigan State College, East Lansing, Mich.
Journal of Industrial Economics, Nuffield College, Oxford, England
Journal of Marketing, Hearst Advertising Service, 959 Eighth Ave., New York, N. Y.
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Journal of Royal Statistical Society, 4 Portugal St., Kingsway, London, W. C. 2, England
Kokumin-Keizai Zasshi, Inst. for Econ. Res., Kobe Univ. of Econ., Rokko, Kobe, Japan
Kyklos, Bern, Switzerland
LEA, Org. of American States, Pan American Union, Washington 6, D. C.
La Comunita Internazionale, Societa Italiana per la Organizzazione Internazionale, Palazzetto di Venezia, Via S. Marco 3, Rome, Italy
La Nuova Rivista di Diritto Commerciale, Diritto dell'Economia Diritto Sociale, Universita di Pisa, Pisa, Italy
La Vie Économique et Sociale, 13, Rue du Prince, Antwerp, Belgium
Labour Gazette, Dept. of Labour, Confederation Bldg., Ottawa, Ont., Canada
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Land Economics, Univ. of Wisconsin, Sterling Hall, Madison, Wis.
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London School of Economics and Political Science, Clare Market, London, W.C., England
Maandschrift "Economie," Korvelsche weg 158A, Tilburg, Holland
Manchester School, Dept. of Economics, The Univ., Manchester 13, England
Marketing Research Div., Bur. of For. and Dom. Com., Washington, D. C.
Metroeconomica, Libreria Internazionale L. Cappelli, Corso 12, Trieste
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Middle East Journal, 1906 Florida Ave., N.W., Washington 9, D. C.
Monthly Labor Review, U. S. Dept. of Labor, Bur. of Labor Statis., Washington, D. C.
Narodohospodarsky Obzor, Staromestke nam 12, Prague I, Czechoslovakia
National Association of Cost Accountants, 505 Park Ave., New York 22, N. Y.
National Okonomisk Tidsskrift, Niels Hemmingsensgade 24, Copenhagen K, Denmark
Nordisk Tidsskrift for Teknisk Okonomi, Statistick Laboratorium, Univ. of Copenhagen, Copenhagen, Denmark
Oesterreichisches Institut für Wirtschaftsforschung, Wipplingerstrasse 34, Vienna 1, Austria
Okonomi, Naeringsokonomisk Forskningsinstitutt, Radhusgaten 25, Oslo, Norway
Okonomi og Politik, Sankt Peders Straede 5, Copenhagen 5, Denmark
Openbare Financien, Emmalaan 2, Haarlem, Holland
Oriental Economist, 2, 3-chome, Nihonbashi Honkoku-cho, Chuo-ku, Tokyo, Japan
Oxford Economic Papers, Inst. of Statis., St. Cross Rd., Oxford, England
Politeia, Institut International des Sciences Sociales et Politiques, Université de Fribourg, Fribourg, Switzerland
Political Science Quarterly, Columbia Univ., New York, 27, N. Y.
Polskie Towarzystwo Ekonomiczne, Redakcja "Ekonomisty," Nowy Swiat 49, Dom Ekonomistow Polskich, Warsaw, Poland
Population, Institut National d'Études Demographiques, 23, Ave. Franklin D. Roosevelt, Paris (8), France
Population Studies, Population Investigation Com., London Sch. of Econ. and Polit. Sci., London, England
Probleme Economie, Consiliul Superior Economic, Str. Polona Nr. 4, Bucarest III, Rumania
Public Administration, Inst. of Public Admin., 76A New Cavendish St., London W. 1, England
Public Administration Review, 1313 E. 60th St., Chicago 37, Ill.
Quarterly Journal of Economics, M-12 Littauer Center, Cambridge, Mass.
Review of Economic Statistics, 322 Littauer Center, Harvard University, Cambridge, Mass.
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Revista Colegio Mayor de Nuestra Senora del Rosario, Apartado 72, Bogota, Colombia
Revista Cubana de Economia, Teniente Rey No. 405, Havana, Cuba
Revista de Archivos, Bibliotecas y Museos, Biblioteca Nacional, Madrid, Spain
Revista de Ciencias Economicas, Facultad de Ciencias Economicas, Universidad de Buenos Aires, Calle Cordoba 2122, Buenos Aires, Argentina
Revista de Economia, Apartado No. 142, Lisbon, Portugal
Revista de Economia, Palma Norte 308, Desp. 509, Mexico, D. F.
Revista de Economia, Rincon 593, Montevideo, Uruguay
Revista de Economia y Estadistica, Mexico City, Mexico
Revista de Economia e Estatistica, Ministerio da Agricultura, Rio de Janeiro, Brazil
Revista de Estudios Politicos, Instituto de Estudios Politicos, Plaza de la Marina Espanola, 8, Madrid, Spain
Revista de Hacienda, Departamento Autonomo de Prensa y Publicidad, Bucareli 12, Despacho 211, Mexico City, D. F.
Revista del Instituto de Economia y Tecnica Publicitaria, Facultad de Ciencias Economicas, Instituto de Economia y Tecnica Publicitaria, Urquiza 161, Cordoba, Argentina
Revista Mexicana de Sociologia, Instituto de Investigaciones Sociales, Calle del Lic. Verdad numero 3, Mexico, D. F.
Revista de Ministerio de Fomento, P.O. Box 1489, Caracas, Venezuela
Revue de l'Institut de Sociologie, Institut de Sociologie Solvay, Université Libre de Bruxelles, Brussels, Belgium
Revue d'Économie Politique, 22 Rue Soufflot, Paris, France
Revue d'Histoire Économique et Sociale, Faculté de Droit, Poitiers (Vienne), France
Revue de Science et de Legislation Financieres, 8, rue Duguay-Trouin, Paris (6), France
Revue Économique, 18, Rue de l'Abbe-de-L'Epee, Paris (5), France
Revue Internationale des Industries Agricoles, Comm. Int. des Ind. Agric., 18, Ave. de Villars, Paris VII, France
Rivista, Societa Italiana di Demografia e Statistica, Piazza del Fante 8, Rome, Italy
Rivista di Economia Agraria, Casella Postage 583, Bologna, Italy
Rivista di Politica Economica, Via Cesare Battisti 121, Rome, Italy
Schweizerische Zeitschrift für Volkswirtschaft und Statistik, Postfach 729, Basel 1, Switzerland
Science and Society, 30 E. 20th St., New York 3, N. Y.
Social Forces, Univ. of North Carolina, Chapel Hill, N. C.
Social Research, Grad. Faculty of Polit. and Soc. Sci., New Sch. of Soc. Res., 66 W. 12th St., New York, N. Y.
Sociedad Uruguaya de Economia Politica, Vasquez Vega 1135, Montevideo, Uruguay, S. A.
South African Journal of Economics, P.O. Box 5316, Johannesburg, S. Africa
Southern Economic Journal, Univ. of North Carolina, Chapel, N. C.
Sozialforschungsstelle, Rheinlanddamm 201, Dortmund, Western Germany
State Statistical Office of Czechoslovak Republic, Belskeho 2, Prague, Czechoslovakia

EXHIBIT 2

THE PROFESSION OF ECONOMIST

The brief statement which follows represents an initial effort to describe what an economist is and what he does and what may be expected by those who contemplate the study of economics as a preparation for a career.

The attempt to formulate an explanation of "economist" as a profession was originally prompted by a request to the Association from the office of the National Roster of Scientific and Specialized Personnel (now a branch of the United States Employment Service of the Department of Labor). The first draft submitted by the Secretary was pitched at too high a professional level and was redrafted by the National Roster staff to meet the needs of those seeking vocational information. This version did not meet our approval and we were given an opportunity to make further criticisms and suggestions. The description in its present form owes its character largely to the revisions made by a committee consisting of F. W. Fetter, Fritz Machlup, H. S. Ellis, and your Secretary.

DESCRIPTION OF THE PROFESSION OF ECONOMIST

Occupational Summary

Economists study the whole process through which man makes a living and satisfies his wants for food, shelter, service or amusement, and the conditions favoring or hampering his economic development. This includes where, how and what man produces, how goods and services are distributed and paid for. They study the organization of industries; the labor supply and its use; the commercial banking and credit structure and government finance, both local and national; international trade and how it is financed; the national income and wealth, its production and distribution; the growth and shifts in population; standards of living; the use and conservation of land and natural resources. The objective of economists is to point out what policies and programs in industry or government will aid in the development of an industry or will facilitate the growth of trade and raise the individual's standard of living. Many economists are college teachers, others are in the employ of industry or government serving as statisticians, research analysts or advisors on economic policies and programs.

Economists study in their basic training all branches of economic theory. Some specialize in one or more branches since many of these subjects tend to overlap or merge.

Major Branches

1. *Economic Theory:* The economist specializing in economic theory is familiar with the history of economic institutions and practices, and makes a comparative and analytical examination of past and present systems of economic organization (e.g. feudalism, state socialism, capitalism, etc.) and of the systems of thought underlying these organizations.
2. *Money, Banking, and Finance:* Economists specializing in this branch study the nature and functions of money and banks, the means by which banks create purchasing power, and devices used to regulate amount of bank lending. They study forms of credit and credit instruments, and the relationship of money purchasing power to levels of economic activity. The fiscal economist studies the ways in which government is financed and public funds are spent; the effects of taxation and spending upon business activity as a whole; and plans a distribution of taxes equitable for all elements of the population.
3. *Industry:* The economist specializing in industry studies forms of business organizations, with arrangements for the production and marketing of goods and services and thus studies costs and prices, private investment policies, wholesale or retail trade, business trends, regulation by government of industrial monopoly and industry generally. The economist may specialize in one one or more specific industries, either non-manufacturing, such as forestry, or construction; or manufacturing, such as food, textiles, lumber, paper, iron, steel, petroleum or rubber.

In the transportation and public utilities

industries he studies rates, valuations, traffic or use of service, and materials as they affect railways; aviation; water transportation; electric power and gas; highway, bus and truck transportation; radio and radio broadcasting; and wire communications. He also studies the effects of government regulation, consolidations and monopoly, ownership and operation in these industries.

Economists in this field attempt to explain why the national output of goods and services is subject to fluctuations, and to recommend measures for assuring a higher and more stable level of output and employment. They investigate the influence of private investment (production of new plant and equipment), of government spending and taxing, of monopolies, and of wage policies, upon the level of employment. As a guide to future policy, they make estimates of the size of the national output which our country is capable of producing.

4. *International Trade:* The economist specializing in international trade studies the factors determining the movement of goods among nations; trade restrictions, including tariffs, quotas, and exchange controls; the operation of foreign exchange; international investment and the problems of international capital transfer.
5. *Agricultural Economics:* The agricultural economist studies the economic aspects of agriculture, and its relationship to other fields of economics, in particular transportation, money and banking, and international trade. He studies farm management, crop estimating, agricultural credit, marketing of farm production, and commodity exchanges, and their relation to crop production and prices. He also studies the relationship between the agricultural production and income and the rest of the economy, its tax structure, labor supply, tariff policies and other aspects.
6. *Labor Economics:* The labor economist studies factors affecting the supply, demand, organization, and well-being of labor. He studies wages and hours; industrial versus craft unions; management policies; pensions, insurance, and other welfare matters; labor legislation; labor disputes; conciliation, arbitration; and the effect of labor policies on industry and the national economy.
7. *Socio-Economics:* The economist specializing in this branch studies broad developments as they affect the economic welfare of the country. This includes such subjects as population growth and movements; national income by social group; the occupational distribution of people; the conservation and use of such natural resources as minerals, water power and land; and regional planning.

Functional Activities

The economist may specialize in one or in a combination of any of the following functional activities:

1. Teaching—at the college or university level. He usually but not always engages in part-time research.
2. Research—he conducts research on a full-time basis in government, in business and industrial establishments, in banks, in labor unions and at private research foundations.
3. Management or Administration of industry or government.
4. Technical editing and writing of books, magazines, pamphlets, and newspaper articles.
5. Consulting and advisory work for governments, business and financial institutions, and investors.

Professional Affiliations and Civil Service Status

Membership in a national or local professional organization is no criterion of professional status since such membership is open to anyone interested in the objectives or activities of the society. Most economists, however, are affiliated with one or more professional societies.

In the Federal Civil Service and in many state or local civil service jurisdictions, a professional job classification or a rating on a civil service register as economist generally indicates the professional status of the economist. Economists may also be classified by civil service as social science analyst, or labor market analyst, labor relations specialist, tax expert.

Educational Qualifications

The professional economist usually possesses an M.A. or Ph.D. in economics. Such a degree is generally required for advancement in colleges and universities. For the higher levels in the government service and in industry where the Ph.D. is not shown, the equivalent in professional experience and graduate work is usually required. Junior positions in the Federal service are, however, open to those with a bachelor's degree and a major in economics.

Related Occupations

(a) High school teachers of economics who may possess a bachelor's degree in economics are classified as *teachers, high school* rather than as professional economists.
(b) Journalists and radio news commentators usually are interested in economic affairs and express opinions upon economic issues, but they ordinarily are not classified as economists.
(c) Bankers, bank cashiers, and related banking, insurance and finance occupations are classified under managerial occupations.
(d) Home economists are classified as such.
(e) Those engaged in rural rehabilitation, and farm planning and demonstration are usually not classified as economists.

Sources of Employment

Economists are employed for the most part as college and university teachers, and in research and administrative capacities in government and business (banks, investment houses, railroads, public utilities, manufacturing firms). They find employment also with labor unions and private research institutes. Some are self-employed as consultants.